

Implications of Accounting and Tax Treatment of Cryptocurrencies

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Abstract

The digital revolution is changing everyday business and creating new technologies and tools that allow companies flexibility and simplicity in doing business and increase business performance. The digital age creates new concepts that also affect accounting processing, which presents new challenges in accounting practice. One of the most significant changes and innovations within accounting processing and the financial industry is the emergence of cryptocurrencies that create a completely new financial business concept. Cryptocurrency is the equivalent of electronic money and is completely digital. Although cryptocurrencies and transactions with cryptocurrencies are frequent appearances in today's modern business, accounting and tax treatment in the Republic of Croatia and other European Union countries but also beyond is not fully established and adjusted for doing business with cryptocurrencies, which requires strict regulation and adjustment operations with cryptocurrencies. As cryptocurrencies become more popular, so do taxes on cryptocurrencies that vary from country to country. Cryptocurrencies are associated with risks such as money laundering, terrorist financing, and tax evasion, which require the establishment of a regulatory body and the implementation and application of regulations in the function of the transparent business with cryptocurrencies. This paper aims to investigate the characteristics of cryptocurrencies and their financial, accounting, and tax treatment.

Keywords: money, cryptocurrencies, blockchain technology, financial system, accounting, taxes

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Introduction

The new digital age brings with it several innovations and new products that have become an indispensable part of today's business. New digital technologies, digitalization, and digital transformation of business are changing traditional ways of doing business, and companies are adapting to new trends and moving to new digital business models. Today, it is unthinkable and impossible to do business without digital technologies, and companies are expected to carry out digital business transformation if they want to follow market trends and if they want to be competitive. Digitalization and digital transformation of business bring several advantages and benefits to the organization while it is up to the organization to recognize the importance of implementation and usage of new digital technologies.

Financial markets are trying to respond to new and modern demands of the market and users by developing several innovations thanks to digitalization and digital technologies. Blockchain technology and cryptocurrencies are just some of FinTech's products that are changing the ways and models of business known so far. Virtual currencies are modern forms of money and transactions through them are faster, more transparent, and more secure. After the global economic crisis in 2008, cryptocurrencies appeared, which are still an insufficiently researched and undefined topic and an area that still requires numerous researches.

Cryptocurrencies in financial operations function without the mediation of banks, which ensures the user's complete anonymity and speed of data and money transfer. Cryptocurrencies are completely digital and carry a certain degree of risk because they are based on supply and demand for them, which represents a certain degree of uncertainty for the user. The task of the regulatory market is to ensure a transparent global network for transactions and data credibility, i.e. a regulatory body that will take care of and support the mentioned transaction mechanism. The area that requires the most attention when it comes to cryptocurrencies is their accounting and tax treatment and their regulation in the financial market.

This paper aims to investigate and determine the characteristics of cryptocurrencies to investigate their advantages and disadvantages, accounting and tax treatment of cryptocurrencies, how to perform transactions using cryptocurrencies, and examine the level of transparency and proper recording of this type of transaction in the financial market.

The Concept of Cryptocurrencies

Cryptocurrencies are digital records stored in digital databases and are a means of digital exchange. Cryptocurrencies are virtual money (the equivalent of electronic money) that can be traded digitally and that serves as (1) a medium of exchange, (2) units of measure, (3) used to store value, but not an official means of payment in any states (Čičin-Šain, 2016). Cryptocurrencies exist only on the Internet, they are not issued by any bank or state, so they are not formally money. However, Cunjak Mataković et al. (2018) see its ease of transmission over the Internet as an advantage. Some of the advantages of cryptocurrencies are: (1) a higher degree of security concerning money because the data is not stored centrally on a single database, (2) the inability to enforce cryptocurrencies are scattered on several sides, which would mean case of enforcement the enforcement on 51% of the database which represents a very complex system (Rogina, 2017). Also, cryptocurrencies create cheaper transactions, they are more accessible, more practical, but the security of data is questionable, which is one of the key areas of their further regulation.

Cryptocurrencies are kept in the so-called "digital wallet" on one of the websites that provide this kind of service. Cryptocurrencies, unlike credit/debit cards, do not contain or require names, but only have a digital wallet code, the so-called key that ensures anonymity, which is enabled through a peer-to-peer system, as a decentralized system without a central authority. All mentioned transactions take place through the general or public ledger which monitors and records all performed transactions of cryptocurrencies and is called the blockchain. The basic and key features of blockchain technology are that the system is based on peer-to-peer partners where the system is decentralized and there is no central authority (financial institutions, etc.) and each record and each transaction is recorded in real-time between many nodes within peer-to-peer systems (Cunjak Mataković et al., 2018).

Cryptocurrencies use a Peer-to-Peer system (a system consisting of interconnected nodes) that works through a cryptographic mechanism through which all transactions are created and recorded through the so-called private and public address keys (digital record, a file containing the number of cryptocurrency units transferred). The entire blockchain system consists of computers connected to a network that confirm/verify certain transactions. Blockchain is associated with the term mining, which implies the process of confirming and adding new transactions in the blockchain. Although they do not physically exist, around 1,700 virtual currencies are an increasingly common means of payment in the world, but bitcoin convincingly retains its leading position.

In 2008, under the pseudonym Satoshi Nakamoto, an article entitled "Bitcoin - A Peer to Peer Electronic Cash" was published, constructing today's most famous virtual currency, "bitcoin". Bitcoin is the first real digital solution to the problem of sovereignty, stability, and marketability it is resistant to unexpected inflation, while at the same time being marketable in every area, in all sizes and at all times" (Ammous, 2020). "Bitcoin has no intrinsic value and its value mostly depends on its speculative value. The speculative value is based on spins on the technological mystery associated with cryptocurrency mining" (Cunjak Mataković et al., 2018). The main feature and the biggest advantage of cryptocurrencies, ie bitcoin, and blockchain technology, is a simple way of transferring money that takes place without intermediaries (over the Internet) where a third party cannot influence the transaction, while the total cryptocurrency market today is worth more than 1.4 billion USD. About the growing popularity of cryptocurrencies, especially among Generation Z, ensuring customer satisfaction has a positive effect on creating the intention to use cryptocurrencies (Alaeddin et al., 2018).

Blockchain technology has great potential because it speeds up and automates business processes, which can lead to reduced costs and safer and faster returns on investment. Blockchain technology is associated with the emergence of the concept of "smart contract" concluded between two parties (automatic implementation by the platform and within it) without the need for human intervention (Garcia Bringas et al., 2020). The concept of a smart contract is supported today by the four most popular blockchain platforms bitcoin, Ethereum, HyperLedger Fabric, and Corda (Garcia Bringas et al., 2020). "Blockchain technology can support a new generation of transactional applications and streamlined business processes by establishing trust among parties, accountability, and transparency that are essential to modern commerce" (Rahmadika et al., 2018). The growing interest and interest in cryptocurrencies is also shown by the research of the author Ogachi et al. (2021) which proves that price increases encourage people to keep their money in long-term deposits, including in cryptocurrencies. Recognizing

the importance of blockchain technology as well as its further progress, the authors Juričić et al. (2020) explore and define alternative mechanisms that can replace the existing Blockchain algorithm and thus make it more efficient. The importance of blockchain technology is also visible in the creation of new innovative networks and new infrastructure to replace old and non-integrated systems (Marrara et al., 2019). It has been proven that blockchain technology in combination with IoT elements contributes to the optimization of business processes, traceability, and transparency of the supply chain with significant financial savings within logistics processes, which speaks of a wider and significant application of blockchain technology (Merkaš et al., 2020).

The main problem that arises around bitcoin is its regulation, ie the non-existence of a regulatory body and reaching an agreement on the nature of bitcoin (understanding bitcoin as money or as good), which is a possibility for various frauds. The importance of regulation and verification of transactions with cryptocurrencies is recognized by auditing and the authors Ozeran et al. (2021) who investigate audit procedures, ie risk assessment, ie. significant misstatements in the financial statements related to cryptocurrency transactions and balances. It is through audit and audit monitoring of the adoption of blockchain technology that it can result in increased efficiency during the audit process because there will be a higher level of information revision (Bonyuet, 2020).

Research Sharma et al. (2019) defines five important research gaps about bitcoin emerge: (1) research on the use of bitcoin and cryptocurrency in developing countries and across countries as well, (2) approach through a mixed-method (case study and user surveys) regarding the perception and understanding treatment of bitcoin and cryptocurrencies, (3) more research needed on legal regulations and the accounting framework of Bitcoin, (4) research on comparative analysis and mixed-method approach concerning other cryptocurrencies and bitcoin, (5) need for studies focusing on a longer period of cryptocurrency analysis.

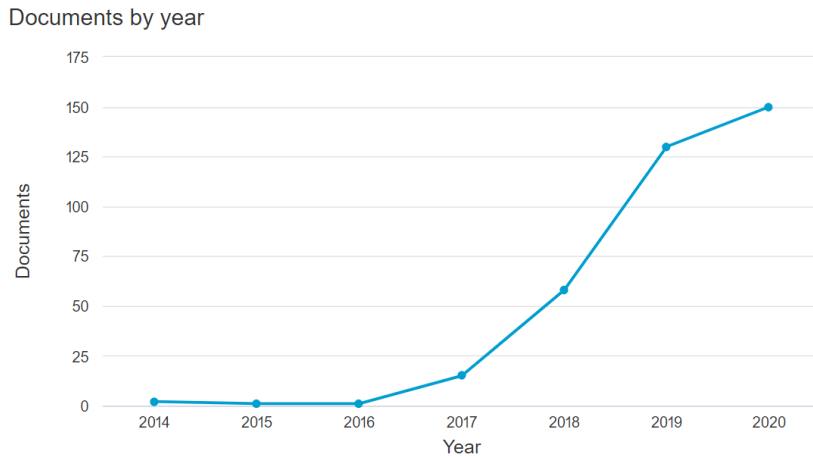
Methodology

To research and review novelties in the field of new digital technologies and digitalization with an emphasis on cryptocurrencies in the field of accounting, numerous world, and Croatian literature have been researched.

Papers within the Scopus, Web of Science, and Google Scholar databases were used to gather information on the research topic which shows insufficient research in this area. In all three databases, very few papers were found that investigate the accounting issues related to cryptocurrencies. To demonstrate the scarcity of this research topic, we present here the results of searching Scopus. Search of Scopus using the following approach (TITLE-ABS-KEY (cryptocurrency*) AND (LIMIT-TO (PUBSTAGE, "final")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (SUBJAREA, "BUSI"))) resulted in the 435 scientific papers.

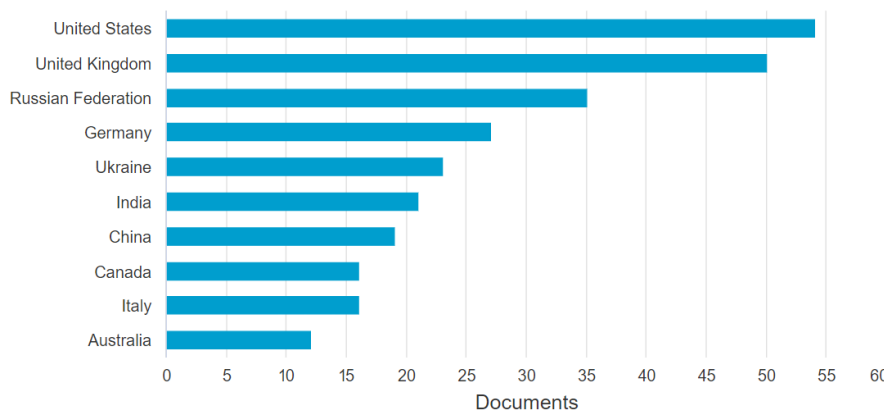
The number of papers that are investigating the various issue of cryptocurrencies has increased substantially from 2014 to 2020 (Figure 1). Most of the research papers were from the United States, United Kingdom, and Russian Federation (Figure 2).

Figure 1
Number of papers that research the topic of cryptocurrency in Scopus (2014-2020)



Source: Authors' work

Figure 2
Country of origin of the authors of the papers investigating the topic of cryptocurrency in Scopus (2014-2020)



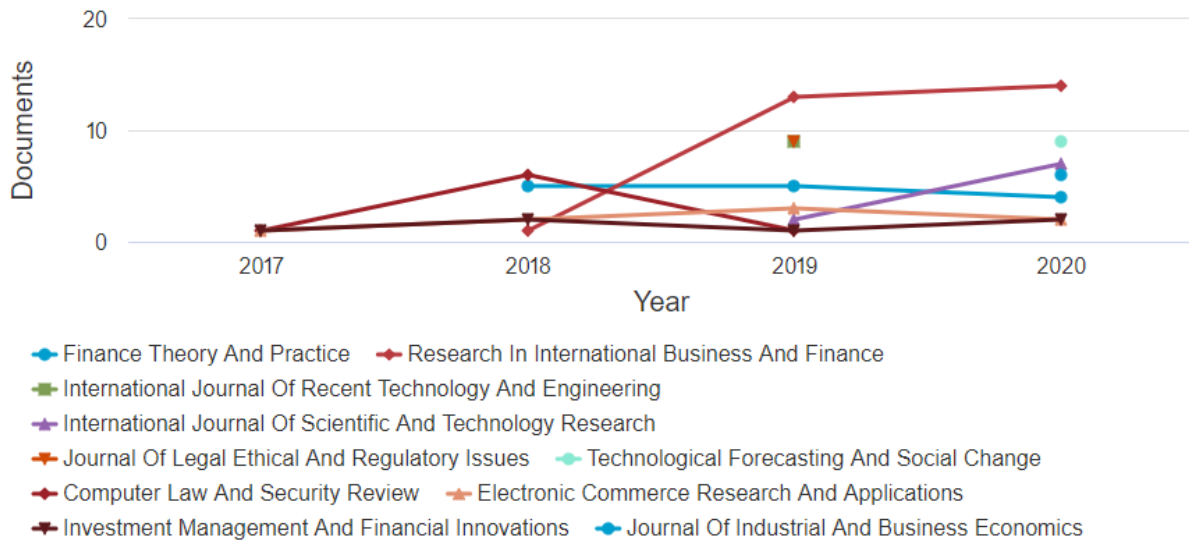
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Figure 3 presents the journals that published the paper investigating the topic of cryptocurrency in the period 2014-2020. The largest number of papers were published in the Research in International Business and Finance (28 papers), followed by Finance Theory and Practice (14 papers).

Other journals that published more than five papers on cryptocurrencies are International Journal of Recent Technology and Engineering (9 papers), International Journal of Scientific and Technology Research (9 papers), Journal of Legal Ethical and Regulatory Issues (9 papers), Technological Forecasting And Social Change (9 papers), Computer Law And Security Review (8 papers), IEEE Transactions on Engineering Management (7 papers), and Electronic Commerce Research and Applications, Investment Management and Financial Innovations, Journal of Industrial and Business Economics, and Journal of Payments Strategy and Systems, with 6 papers published in each of them.

Figure 3

The journals that published the paper investigating the topic of cryptocurrency in the period 2014-2020

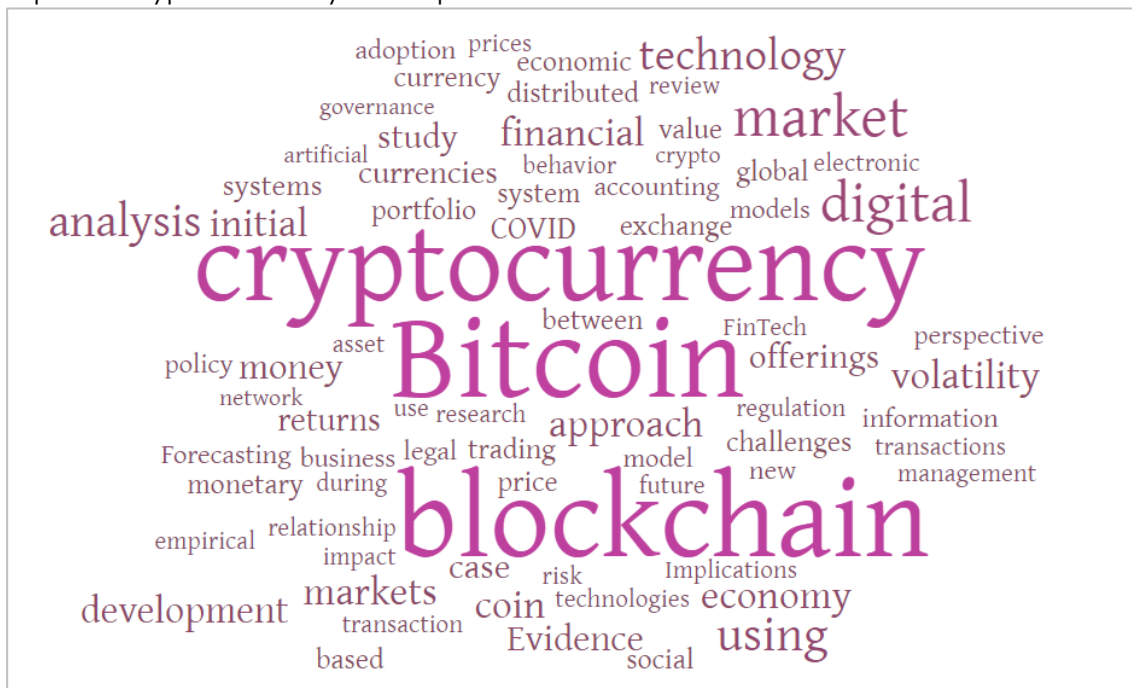


Source: Authors' work

The word accounting appears 9 times in the papers researching cryptocurrencies, which indicates that the issue of accounting of cryptocurrencies is still a developing topic (Figure 4).

Figure 4.

Wordcloud of words appearing in the title of the journal papers investigating the topic of cryptocurrency in the period 2014-2020



Source: Authors' work, using Word-it-out.com; Based on the Scopus search results

Studies that have been collected searching Scopus, Web of Science, and Google Scholar for exploring the researched topic, deal with the impact of new

technologies on accounting practice, i.e. accounting and tax treatment of cryptocurrencies and their implications on the financial market. But as mentioned, the concept of cryptocurrencies within the accounting profession is still insufficiently researched, which requires further efforts and research in this area.

Results

Accounting Treatment of Cryptocurrencies

Digitalization and digital transformation of business has an impact on all companies, but also on its business functions, including accounting itself. Further development of digitalization today marks the fourth industrial revolution that creates new Internet technologies such as cyber-physical systems, Internet of Things (IoT), Internet Service (IoS), 5G, and industrial Internet (Roblek et al., 2020). A wide range of tools is available to accountants in data processing and analysis, but the digital age provides and markets new and modern technologies daily. Data processing, recording, analysis, and interpretation of data as part of the work within accounting is affected by new technology, where it is important to understand the importance and significance of new digital technologies to improve business and further development of accounting in the context of new technologies. As author Stein Smith (2018) states through his research "blockchain technology are the most discussed technology option and tool in the accounting, finance, and legal professions in recent decades".

Cryptocurrencies, as already mentioned, are becoming a means of payment, so the way of regulating, recording, and monitoring these types of transactions for accountants is an increasingly demanding and complex task. In addition to cryptocurrencies, it is necessary to distinguish them between crypto-assets. Cryptoassets are totality assets and information necessary and available for storage and processing through a blockchain platform which, unlike cryptocurrencies, does not necessarily have to be anonymous (Smith et al., 2019). "Blockchain and crypto assets are transforming how business is conducted" (Bennett et al., 2020). The authors Alarcon and Ng (2018) believe, however, that the new blockchain technology provides a triple-entry bookkeeping system where all transactions are immutable and time-certified, recorded in real-time, and encrypted. The transition to blockchain technology for accounting practice involves changing and adapting the accounting information system to electronic sophisticated programs and applications that are technologically advanced (ALSaqa et al., 2019). Tracking accounting transactions and their continuous recording through blockchain can generate a complete route and history of items for such transactions (Bonyuet, 2020). The discussion about the contribution and importance of blockchain technology to accounting is visibly clear in terms of new technologies that bring several benefits, in this case, blockchain for the accounting profession. To examine the implications and predict the scenarios of accounting transactions and their tax implications elaborate authors Gomaa et al. (2019). They explore and present: (1) an overview of the execution of transactions in cryptocurrency exchange (accounting consulting services), (2) suggest methods for tracking transactions (transaction provider, transaction recipient, and blockchain), (3) clarify the importance of properly recording and tracking cryptocurrencies where IRS recognizes cryptocurrencies as properties (Gomaa et al., 2019).

With the advent of new technologies and especially blockchain technologies, the American Institute of Certified Public Accountants (AICPA) monitors current legislative programs and their impact on the accounting profession (AICPA, 2018). That is why the work of accountants and the accounting profession results in new

concepts of accounting for the profession to adapt and learn following the requirements of new modern technologies.

Based on the above, the accounting profession is not yet fully adapted to the cryptocurrency business. Currently, there are no accounting standards in the accounting profession that follow cryptocurrencies and their accounting treatment, ie monitoring and recording, accountants currently refer to existing accounting standards. Due to that, we can talk about the lack of guidance for the measurement and presentation of holding and trading cryptocurrencies. Accounting treatment of cryptocurrencies under the Financial Accounting Standards Board (FASB) and International Financial Reporting Standards (IFRS) is unclear. Although the International Financial Standards Board (IFSB) produced a draft document for guidance in the reporting of cryptocurrency, they have only provided a broad overview of these issues and the actual guidance for accounting for cryptocurrency is lacking (Ryabova et al., 2019). Non-harmonized accounting can jeopardize the ability of users to properly assess the financial position and performance of entities involved in cryptocurrency transactions (Procházka, 2018). Author (Tsuji, 2020) believes that the regulation of cryptocurrencies, ie their treatment within the financial statements should maintain the economic circumstances arising from the psychology of cryptocurrency users.

Regulation of accounting operations through International Financial Reporting Standards (IFRS) hardly fits cryptocurrencies within the structure of IFRS (Čičák, 2019). The issue of valuing cryptocurrencies within accounting relates to its recognition and recording of transactions. In this context, the valuation and recording of cryptocurrency transactions through International Accounting Standard 38 (IAS) as intangible assets or in certain circumstances as Inventories through IAS 2 (Čiček, 2019) is considered acceptable. However, there are different interpretations of cryptocurrencies, so there is a valuation outside the mentioned standards (Table 1).

As already mentioned, cryptocurrencies are a form of digital money, but unlike real money that is controlled by the state or the central bank, cryptocurrency is not. In this accounting context, cryptocurrencies do not meet the definition of money according to IAS 7, according to which money includes cash on hand and demand deposits (Čičák, 2019). Furthermore, the valuation of cryptocurrencies as a financial instrument is also unacceptable because cryptocurrencies also do not meet the requirements of IFRS-9 (IFRS-9 defines the recognition of assets as a financial instrument if there is a relationship that will create a financial asset and a financial liability). Valuation through IAS 40, investment in assets, is unacceptable, cryptocurrencies are not a physical form of assets as they are by definition, e.g. land or buildings. Accordingly, from an accounting point of view, cryptocurrency cannot be valued as money, a financial instrument, and an investment in real estate.

Intangible assets do not have physical characteristics and future economic benefits can be expected from them. According to IAS 38, intangible assets are separate assets (may be sold separately, transferred, exchanged, etc.) and are the result of contractual or legal rights. Based on the above, cryptocurrencies meet the definitions of intangible assets because they are exchangeable, it is possible to identify them in total assets as separate assets and they are expected to have future economic benefits (Čičák, 2019).

According to Table 1, cryptocurrencies are defined as intangible assets within the provision of IAS 38 (alternatively through IAS 2), while the initial idea of the creator of cryptocurrencies was valuation, ie a substitute for money and cash equivalents or an investment that is logically similar to an investment into financial assets (Čičák, 2019).

Table 1

Valuation of cryptocurrencies according to IFRS

Standard	Evaluation	Acceptable under IFRS
MRS 7 - Cash flow statement	Cash and cash equivalents	No
MSFI 9 - Financial instruments	Financial assets at fair value through profit or loss	No
MRS 40 - Real estate investments	Real estate investments	No
MRS 16 - Property, plant, and equipment	Property, plant, and equipment	No
MRS 38 - Intangible assets	Intangible assets	Yes
MRS 2 - Supply	Supply	In certain circumstances

Source: Čičák (2019)

The regulation of cryptocurrencies within existing accounting standards due to the lack of standards for monitoring cryptocurrencies poses a major challenge for the accounting profession and is the result of several studies addressing these issues. Research conducted by Pelucio-Grecco et al. (2020) considers that based on the main characteristics of bitcoin, it belongs to the classification of foreign currency, whereby they believe that virtual currencies do not have all the characteristics of a classic currency but have important common features: medium of exchange, a common measure of value and standardized exchange value. Given that IFRS does not contain specific guidelines for accounting monitoring of cryptocurrencies, author Procházka (2018) proposes several models for monitoring cryptocurrencies based on existing accounting procedures. These models serve to present user-relevant information that represents the economic reality of cryptocurrencies (Procházka, 2018).

Based on all the above, it is necessary to find a consensus and define an international accounting standard that will monitor and record cryptocurrencies.

Tax Treatment of Cryptocurrencies

Due to the increased need for cryptocurrencies, the need to change the laws in the countries to regulate the performance of cryptocurrency transactions is also encouraged. Tax authorities and regulators around the world are trying to understand the concept of cryptocurrency and blockchain and place them within the legal framework. Moreover, their virtual transactions are considered legal in many regulations. Therefore, the possession of cryptocurrencies is even prohibited by law in some countries (Bangladesh, Bolivia, Ecuador, Kyrgyzstan, Vietnam, and Russia, and China are on the verge of being banned). Due to the lack of legal regulation of cryptocurrencies, most countries do not regulate transactions and exchanges with cryptocurrencies, which leads to the growth of illegal transactions (Kostyuchenko et al., 2020). Given that cryptocurrencies (bitcoin) are often associated with different types of legal and illegal activities, author's Barth et al. (2020) explore ethical considerations related to the use of cryptocurrencies and their impact on cryptocurrency price estimates. The results indicate that the frequency of unethical discussion about Bitcoin negatively correlates with its price, while the frequency of ethical discussion positively correlates with the price of the cryptocurrency. Their misunderstanding and lack of regulation underscores the need for cryptocurrencies (bitcoin) to be regulated by the state to avoid tax evasion, possible links to the illegal market, and protect consumer rights (Pelucio-Grecco et al., 2020).

Different countries value cryptocurrencies differently, so the taxation and tax treatment of cryptocurrencies are different within different countries. Trading with

cryptocurrencies generates earnings or receipts that are considered capital receipts, so income tax is paid on the income earned based on trading them based on capital gains. But there are also so-called. "Crypto-friendly" countries that have introduced more lenient laws to promote better adoption and innovation in the crypto-industry and allow investors to buy, sell or hold digital assets without tax.

Given that there is no law on cryptocurrencies in the Republic of Croatia, the existing Law on Cryptocurrency Income Tax is treated as a form of investment (the change of cryptocurrency into fiat money is taxed at a flat rate of 10%). So, in the Republic of Croatia, trading with cryptocurrencies is considered a financial transaction and each transaction is subject to income tax based on capital gains since it is based on the purchase and sale of that currency, which is equivalent to money market instruments. The subject of taxation, ie tax, is paid on the difference between the purchase and sale price less possible trading costs (Tax Administration, 2021). When taxing, it is important to conceptually determine cryptocurrencies, where we distinguish between taxation by direct or indirect taxes. An indirect tax is considered to be value-added tax (VAT), with the tax administration defining whether transactions, including intermediation related to virtual currencies such as "bitcoin", are exempt from VAT (Tax Administration, 2021). Cryptocurrency mining is taxed based on the Income Tax Act, ie the tax is paid on other income (occasional mining) or income from self-employment (continuous mining).

The Tax Administration of the Republic of Croatia has defined that transactions and intermediation of cryptocurrencies fall under the category of transactions and intermediation, and accordingly, these transactions and intermediation are exempt from VAT. If in the recent regulation of cryptocurrencies, it was decided that they are considered a good or a product or their transactions and "mining" service, they would be subject to VAT. Capital gains from trading in cryptocurrencies of natural persons or taxpayers are subject to income tax based on capital gains since it is a profit resulting from the purchase and sale of cryptocurrencies (direct taxation). It is important to note that in the case of taxation of cryptocurrencies with income tax, the rules related to financial assets are followed according to the Income Act, although accounting cryptocurrencies are considered intangible assets (Čičak, 2019).

As of January 1, 2020, companies engaged in virtual currency trading and/or providing a wallet custodial service to store private cryptographic keys (e.g., cryptocurrency exchange offices and businesses that rely on crypto transactions) have become subject to the Prevention Act money laundering and terrorist financing (part of the implementation of the 5th European Union (EU) Directive on the prevention of the use of the financial system for money laundering and terrorist financing).

Conclusion

This paper aimed to analyze and investigate the concept and characteristics of cryptocurrencies, and to explore the implications of accounting and tax treatment of cryptocurrencies. To achieve the set objectives, several Croatian and international literature were analyzed in the field of accounting and new digital technologies, i.e. emphasizing the accounting and tax aspects of cryptocurrency treatment. Several worldwide and Croatian researches deal with and explore the field of cryptocurrencies within the accounting profession and the implications that the process of recording, monitoring, and valuing has on the financial market and accounting profession. However, the area is insufficiently researched, especially in the context of insufficient regulation and inconsistencies in the implementation,

monitoring, and evaluation of cryptocurrencies at the global level in the field of accounting. It is extremely important to find a unique and acceptable way of regulating, monitoring, and recording cryptocurrencies shortly to minimize the level of uncertainty between holders and users of accounting information and thus minimize accounting and tax risks.

One of the significant changes and innovations in today's globalized and digitalized world and market is certainly the emergence of Bitcoin cryptocurrency in 2008. Cryptocurrencies are designed for the anonymity of users, without a third party, that is, without intermediaries of banks or some other institutions. The very concept of cryptocurrencies is based on anonymity, transparency, speed of transactions that do not involve intermediaries, but their price still depends on supply and demand, which makes cryptocurrencies quite risky.

In the Republic of Croatia (but also worldwide) cryptocurrencies are valued and monitored as intangible assets or inventories in the case of cryptocurrencies intended for sale. The main problem that arises around the concept of cryptocurrencies is their accounting and tax treatment, which is still insufficiently globally but also nationally regulated. Because it is a decentralized currency and that everything is done digitally without insight into transactions and transactions of larger amounts can be divided into much smaller amounts while avoiding the taxation process, it is important to define and establish a regulatory body that will have monitoring of transactions via cryptocurrencies.

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