UDC: 657.222

Display of cryptocurrency in accounting

Andrii A. Makurin¹, Cand. Ec. Sc., Associate Professor

Received: 28 July 2020
Accepted: 7 September 2020

Makurin, A. A. (2020), “Display of cryptocurrency in accounting”. Economies’ Horizons, no. 3(14), pp. 13–22, doi: https://doi.org/10.31499/2616-5236.3(14).2020.224794

Abstract. The purpose of the research to determine the main features of the use of cryptocurrency and its identification as an object in the account. A comparative description of cryptocurrencies, electronic money and paper money is given. It has been established that there are no grounds to classify various types of cryptocurrencies in the accounting system as ordinary currencies or assets in a given period of time because they: are not regulated by any jurisdictions; it is not possible to identify the issuer or the specific organization responsible for its issuance; cryptocurrency exists only in the virtual Internet environment.

Methods. General scientific methods and approaches, systematic approach, general research methods (analysis, synthesis, generalization, comparison), statistical methods.

Results. The list of stages for reflection of activity of the business entity with use of cryptocurrency is offered and considered. The mining process is analysed and the list of cost items for the extraction of new digital coins is highlighted. The variant on reflection in the account of operations with cryptocurrency on accounts of accounting is offered. There are options for reflection in the accounting of cryptocurrency depending on its recognition: virtual goods, intangible assets, financial investments, digital money. To calculate the cost of cryptocurrency obtained by self-extraction, it is necessary to consider the main costs that need to be identified and reflected in the account. In addition to cryptocurrency, you can extract altcoins, lightcoins or convert cryptocurrencies into stablecoins, which cannot be extracted, but can only be purchased.

The article presents the main aspects of calculating the cost, which include: the cost of electricity for individuals and legal entities in the country; the cost of the necessary equipment, its depreciation and maintenance, depreciation; residual value at which you can sell old mining equipment; hash – the speed of solving mathematical problems with one or another equipment; network load and production complexity; monetary value or exchange rate of a particular cryptocurrency or digital assets.

Practical meaning. Despite all the scientific developments, the issue of accounting for cryptocurrency from the point of view of IFRS is quite debatable. On the one hand, most propose to account for it as a specific intangible asset. Virtual currency is a huge amount of computing power and digital assets. At this stage of technological development of mankind, cryptocurrency is gaining a stable position in the international market.

Prospects for further research. Rapid development is causing further capacity growth and interest, but may eventually lead to collapse. However, if the price stability of the cryptocurrency is achieved, it can be used in international transactions, not just for speculative gain. However, this issue will be directly related to the legalization of the new currency and its recognition by central banks as a means of exchange or storage of money. There is a need for further research to understand the basic conditions for the use of digital currency in the payments market.

¹ Dnipro University of Technology; Associate Professor at the Department of Accounting; ORCID ID: https://orcid.org/0000-0001-8093-736X; e-mail: makurin.a.a@nmu.one
Keywords: cryptocurrency accounting, accounting object, money, intangible assets, virtual goods, information technology.

JEL Classification: J 48, M 41, P 17.

Number of references: 22; number of tables: 2; number of figures: 0; number of formulas: 0.

Відображення криптовалюти в бухгалтерському обліку

Андрій Андрійович Макурін¹, к. е. н., доцент

Стаття надійшла: 28.07.2020
Стаття прийнята: 09.09.2020

Анотація. Метою роботи є визначення основних особливостей з використання криптовалюти та її ідентифікації як об’єкта в обліку. Надано порівняльну характеристику криптовалютам, електронним грошовим коштам та паперовим грошам. Встановлено, що віднести криптовалюту різних видів у обліковій системі до звичайних валют чи активів в даний проміжок часу не існує підстав через те, що вони: не врегулюванні ніякими юрисдикціями; не можливо встановити емітента чи конкретну організацію, яка відповідає за її випуск; криптовалюта існує лише в віртуальному інтернеті – середовищі. Методи. В ході дослідження використано загальнонаукові методи та підходи, системний підхід, загальнологічні методи дослідження (аналіз, синтез, узагальнення, порівняння), статистичні методи. Результати. Запропоновано та розглянуто перелік етапів для відображення діяльності суб’єкта господарювання з використанням криптовалюти. Проаналізовано процес майнінгу та використання перелік статей витрат для видобування нових монет цифрових коштів. Запропоновано варіанти відображення в обліку операцій з криптовалютами на рахунках бухгалтерського обліку. Наведено варіанти відображення в обліку криптовалюти в залежності від її визнання: віртуальним товаром, нематеріальним активом, фінансовою інвестицією, цифровими грошами. Для розрахунку собівартості отриманої криптовалюти шляхом самостійного видобутку необхідно розглянути основні витрати, які необхідно ідентифікувати та відображати в обліку. Крім криптовалюти, можна видобувати альткоїны, лайткоїни або переводити криптовалюту у стейблкоїни, які не можливо видобути, а можна тільки придбати. У статті наведено основні аспекти розрахунку собівартості до яких належать: вартість електроенергії для фізичних та юридичних осіб в країні; вартість необхідного обладнання, його амортизації та обслуговування, моральний знос; залишкова вартість за якою можна реалізувати старе обладнання. Втім, якщо цінова стабільність криптовалюти буде досягнута, то її можна буде використовувати у міжнародних транзакціях, а не лише для спекулятивної вигоди. Однак, це питання вже буде напряму пов’язано з легалізацією нової валюти та її визнанням центральними банками як засобу обміну, або зберігання вартості грошей. Існує потреба в подальших дослідженнях з метою розуміння основних умов використання цифрової валюти на ринку платежів.

¹ Національний технічний університет «Дніпровська політехніка»; доцент кафедри обліку і аудиту; ідентифікатор ORCID: https://orcid.org/0000-0001-8093-736X; e-mail: makurin.a.a@nmu.one
Makurin A. A. Display of cryptocurrency in accounting

Key words: cryptocurrency accounting, accounting object, money, immaterial assets, virtual goods, information technologies.

Number of sources: 22; number of tables: 2; number of figures: 0; number of formulas: 0.

1. Introduction.

The information technology development results in the origin of new types of cryptocurrency. Main advantages of the cryptocurrency use are decentralization and freedom of transactions. Cryptocurrency acts worldwide as the inexpensive technological means of payment as well as special form of investment.

Nowadays, there is no shared idea as for the interpretation of the “cryptocurrency” concept. On the one hand, it is considered as the “virtual currency” and called both a special payment network and a new type of monetary means. On the other hand, it is called a “digital asset”, which can be exchanged for other assets. Cryptocurrency is characterized by a free market rate formed on the demand-supply basis.

Accounting of the traditional monetary means is performed in terms of the identification of a payment instrument and participants of the agreement. Such a process may be represented as follows: “seller – buyer” (agreement) on the “money-goods” principle. That is the approach which helps conduct short-term transactions in terms of similar location of the counterparties. While using cryptocurrency, which may be represented as a series of bytes of certain information, it is necessary to have electronic payment system acting as an intermediary. Main task of such system is the accounting control providing non-admittance of repeated set of bytes. Nowadays, there are several similar systems, which increase the risk of data and information fraud. Bitcoin (cryptocurrency) does not mean the involvement of the third parties to conduct monetary operations; thus, a blockchain system can be considered rather safe.

During the recording of cryptocurrency and operations with it, the accounting has certain legal limitations as the legal status of such assets is different worldwide. It is within the range from virtual currency, monetary surrogate, virtual goods, and digital asset to the intangible asset. Basing on that, there are no legal grounds to recognize cryptocurrency as a payment instrument in Ukraine. Along with that, it is not prohibited to convert cryptocurrency into the national currency and vice versa as such operations are not prohibited at the legislative level; thus, there is no violation of the national legislation. Bitcoin-ATMs already function in the developed countries worldwide but the no availability of the regulatory system does not allow the operation of electronic payment system PayPal (cryptocurrency) in Ukraine (Rysin, Rysin and Fedyuk, 2018, p. 12).

Legalization of the cryptocurrency operations requires a complex process of the determination of cryptocurrency status, a mechanism of its accounting, and the development of a system for taxation and control of such operations. There is the necessity to legalize cryptocurrency and cryptocurrency operations in order to legalize and impose taxes on the cryptocurrency operations and mining process. Basing on the fiscal law, legal entities that buy the equipment for virtual currency mining should enter it in the books and put it into operation. If a physical party (a sole proprietor) buy such equipment, he/she does not enter it in the books, only in case if the latter is in the 3rd group of a simplified taxation system, it should be kept in mind that the income is limited by USD 178,000 (as of 01.06.2020) and costs for its purchase should be confirmed within the limits of the obtained income (Virtual Currency Schemes, 2012).

2. Literature review.

R. Brukhansky and I. Spilnyk (2019b, p. 145–156) try to identify and substantiate the perspectives of solving the problem of digital assets integration in the accounting system and
financial data reporting. The authors focus on the necessity of identification and giving certain legal status for cryptocurrencies in terms of certain legal environment. The research states that the acceptance of cryptoassets by accounting is rather a methodologically complicated but innovative and perspective problem requiring complex solution. In his research, T. Yatsyk (2019, p. 28) represents a comparative characteristic of such main users of the cryptocurrency market as miners, cryptocurrency emitters, online-exchangers, cryptocurrency exchange markets etc. Moreover, the paper analyses stages of the activities of economic agents in the cryptocurrency market to single out the cryptocurrency-related operations. It should be also noted that in the near future such standard assets as bonds will become digital, which will make it possible to develop new decentralized business-models based on a blockchain model. A. Stovpova (2018) studies key features of tokens as cryptoassets, which differ from cryptocurrencies. She also considers the problems of recognition of bitcoin and other cryptocurrencies in accounting. The author substantiates impossibility of using a universal approach to the accounting of cryptocurrency due to its variety and functional difference. In their analysis, T. Tarasova et al. (2020) use stochastic models to forecast a cryptocurrency exchange rate. The authors emphasize the necessity of representation of certain operations in cryptocurrency-related accounting; they propose to recognize digital currency as digital assets. M. Pashkevych et al. (2020) substantiate the necessity of the implementation of a blockchain technology in accounting. They also specify certain risks of the cryptocurrency use and consider the possibility for accounting to record digital assets in financial accounting and financial data reporting. A. Jumde and B. Cho (2020) study if cryptocurrency can draw ahead of fiat money with the help of analytical hierarchy process (AHP) for elaborating a scale of pair comparisons. The results have shown that fiat money still prefer cryptocurrency due to numerous reasons. In his research, S. Ammous (2018) analyses monetary characteristics for five cryptocurrencies to estimate whether they could act as money. He makes a conclusion that only bitcoin has the potential to act as the value storage owing to the facts that it is stick to low supply growth; in addition, it is supported reliably by the distributed network protocol and significant demonstration of nonavailability of any authority. R. Brukhanskyi and I. Spilnyk (2019) consider the essence of cryptocurrency for the accounting purposes: money, their equivalent, currency, goods, shares, financial investments or intangible assets. They conclude that it is required to apply a universal approach to the recording of cryptoassets in accounting. O. Fomena et al. (2019) discuss different aspects of cryptocurrency recognition in Ukraine. They identify the necessity to clarify and harmonize the available national accounting standards for the determination and reporting during the cryptocurrency operations. Along with the development of information technology, there are certain changes not only in the technology dealing with the payment transactions; attitude of people to those operations changes as well (Ievdokymov et al., 2020). Different generations replace each other; we observe transformation of modern society. D. Procházka (2018) proposes the scenarios, in terms of which cryptocurrency should be considered as the (foreign) currency though the financial system regulators do not consider cryptocurrencies as money (fiat currency). In their work, P. Katsiampa et al. (2019) study the interaction between the information demand measured by the Google search index, price return, and volumes of trades for five basic cryptocurrencies. S. Pastrana and G. Suarez-Tangil (2019) prove the illegal conduct of some cryptocurrency operations. They also substantiate the possibility of their evening-out. G. Hong et al. (2018) state that cryptocurrency and its mining is gaining more and more popularity. W. Yijing and Z. Yeze (2019) stress that cryptocurrency is growing in its importance in the reformation of a financial system due to its increasing popularity and loyalty. However, A. Baur
et al. (2015) proves that cryptocurrency is a de-
structing instrument of payment. Nevertheless,
H. Nabilou and A. Prüm (2019) are sure that
soon cryptocurrencies will have considerable
effect on the banking, financial, and monetary
systems.

Despite the considerable interest of sci-
entists in digital assets, a problem of crypto-
currency determination as the accounting ob-
ject is rather debating as it is not clear what it
should be recognized as and where should it
belong to. Consequently, there arises the ne-
cessity of studying the parameters of crypto-
currency as the accounting object.

3. Methodology.

General scientific methods and ap-
proaches, systematic approach, general re-
search methods (analysis, synthesis, generali-
ization), statistical methods.

4. Research objectives.
The purpose is to specify basic param-
ters for the identification of cryptocurrency as
the accounting object with its further recording
in accounting and financial data reporting.

5. Results and discussions.

From the accounting viewpoint, a prob-
lem of considering cryptocurrency as a pay-
ment instrument has not been analysed to the
full extent. Currently, there are no grounds for
qualifying different-type cryptocurrencies in
the accounting as standard currencies or assets
due to the following: they are not regulated by
any jurisdictions; it is impossible to identify an
emitter or a specific organization responsible
for their emission; cryptocurrency exists only
in the virtual internet-medium.

Basic features peculiar for cryptocurrencies and electronic monetary means are given in Table 1.

| Parameter                          | Monetary means | Electronic money                                                                 | Cryptocurrency |
|------------------------------------|----------------|----------------------------------------------------------------------------------|----------------|
| Format                             | Paper          | Digital                                                                         | Digital        |
| Payment unit                       | National currency | Fiat money (USD, UAN, EUR, BYN, ARS)                                            | About 1000 cryptocurrencies |
| Identification of clients          | Passport data | To identify clients, the standards developed by the Financial Action Task Force on Money-laundering (FATF) are used though the standards admit the simplified measures for low-risk financial instruments | Anonymity      |
| Methods of emission                | State institution | Emission in the electronic form in exchange for fiat money emitted by the central regulatory body | Mining – equipment and mathematical methods |
| Emitter                            | National banks | Based on the legal grounds, electronic money emitter (which may be represented by a financial institution) | Private individual, miners |
| Book-keeping operations in terms of the accounts (Ukraine) | 301, 311 | 335 | 127, 301, 335, 35, |

Source: Formed by the authors on the basis of (Jumde and Cho, 2020; Ammous, 2018).

There is a problematic aspect at the initial stage; that is misunderstanding of the algo-
rithm of accounting representation of such op-
erations as well as a mechanism of its taxation. From the technical viewpoint, Ukrainian com-
panies may conduct the operations of crypto-
currency buy and sell, exchange, and payment
using free exchange rate on the Internet-sites
or electronic resources of currency conversion
(a peculiar kind of exchange market).

Thus, anonymity and diversification are
the main cryptocurrency distinctions compar-
ing to electronic money. The emission method
means mining, owing to which new infor-
mation blocks are created and main rewards
for mathematical calculations of certain
Cryptocurrencies are generated. Bitcoin has the greatest market capitalization and, correspondingly, the greatest market share. Bitcoin is a peer-to-peer electronic payment system used in terms of the same-name exchange unit. Maximum number of bitcoins, which can be mined, is limited by 12 million units.

Classification of such assets and their further estimation has significant aftereffects not only for the reporting economic entity but also for the state economy in general (Procházkа, 2018).

According to the preliminary calculations, the last Bitcoin may be mined in 2040. Since the Bitcoin cryptocurrency emission is limited, becoming more and more resource-intensive with the course of time, it is quite common to consider Bitcoin as “digital gold”, i.e. as a certain standard for other cryptocurrencies. Leading role of Bitcoin is confirmed by statistic data concerning the cryptocurrency market functioning (Brukhanskyi and Spilnyk, 2019a).

At the beginning of 2018, market capitalization of cryptocurrencies reached its peak. Cryptocurrencies cannot be neglected in terms of their involvement in a share of wealth of both a state and certain parties. Differences in the approaches to cryptocurrency interpretations are the main practical problem; later, those differences affect the accounting methods, which influence considerably the financial markets. Asymmetry of the information between the authorities and the interested parties experience certain intensification with further effect on the income control in terms of the lack of proper accounting regulation.

To understand better the creation of such an accounting object as cryptocurrency, it is expedient to analyse a mining process with the singling out of certain calculation stages of costs and consideration of main stages, which form the activity of economic entities in the cryptocurrency market.

Thus, stage one of the cryptocurrency creation, i.e. its emission, is the accrual of the ownership rights. There are several ways to get cryptocurrency. The first way requires use of specific equipment for cryptocurrency mining, Internet speed, powerful facilities, and electric power. Certain method (ASIC or mining farm) should select one correct hash code among the millions of combinations, which will form the block heading in the blockchain. As soon as the required number is generated, a block with all the transactions is closed, and miners move on to search for the next one. Miners are rewarded for the correct hash code; the reward is 12.5 bitcoins (Fomina et al., 2019). The rental of premises, heat elimination, and temperature control in the premises are the additional conditions of the successful equipment performance.

The second way is much simpler. That is cryptocurrency purchase in the exchange market for real monetary means. The third way relates to the Thash equipment rent – virtual ASICs on the Internet for certain sum of compensation for the costs described in the first way. The fourth way is a mine, i.e. a barter operation – exchange for some similar asset.

All that should be singled out for further accounting of the costs, formation of the cryptocurrency prime cost, and cryptocurrency representation in both financial and fiscal reports.

Stage two involves cryptocurrency keeping in terms of certain media or virtual wallet. Two variants are possible here – with and without the private key transfer; the key is formed of 50 words in a virtual wallet or of 20 symbols on an information-carrying medium. In this case, form of control and a period, during which an enterprise or sole proprietor can control such asset, is of great importance.

Stage three means the cryptocurrency use in everyday life of enterprises and organizations (Cherchata and Andrusiv, 2018). Two objectives are possible here: the first one is to use cryptocurrency for buying goods and services; the second one is the investment (Andrusiv et al., 2020). There are also other variants of cryptocurrency use, e.g. exchange for monetary means, but the mentioned ones are basic. Moreover, while investing, all the possible risks should be considered. One cannot identify all the risks and protect oneself against them.
For instance, prohibition of cryptocurrency use in any country of the world may influence negatively its exchange, resulting in its further fluctuation; besides, electricity may become more expensive, making the mining inexpedient. Miners start switching off the equipment; load of mining complexity will decrease due to the lower number of network participants; and cryptocurrency will either increase or reduce its cost.

The accounting objects represented by cryptocurrency are accompanied by the subjects of the cryptocurrency market. Traditionally, they include salespeople, buyers, and those who deal with mining of new coins.

The wallet owners specify cold and warm cryptocurrency keeping. Warm keeping includes such wallets as exchange market wallets, mobile applications, and software applications. Cold wallets involves paper ones where a private key is represented by the following: a printable QR code; hardware keeping as a variety of USB flash disc; a computer, but in case of system crash one can lose the wallet access for ever; a coin – developers create real coins, which code a private key for digital money. To calculate the prime cost of the cryptocurrency obtained by independent mining, it is necessary to consider main costs that need to be identified and represented in accounting. Apart from bitcoins, one can mine altcoins and litecoins or transfer cryptocurrency into stablecoins, which are impossible to mine – they can be only bought. Thus, to calculate the cryptocurrency profitability, following aspects should be taken into consideration (Kneysler et al., 2020): cost of electric over for a physical party and legal entity in the country; cost of the required equipment, its amortization, maintenance, and functional depreciation; residual value in terms of which one can sell the outdated mining equipment; hash – a speed of the solution of mathematical problems by certain equipment; network loading and mining complexity; monetary value or exchange rate of a specific cryptocurrency or digital assets.

Thus, cloud mining is profitable for those, who has just started the cryptocurrency operations. For those, who have no possibility to invest money either in the equipment purchase or in the cloud service renting, there are services, which give certain Internet-sites that pay cryptocurrency for watching the advertisements. Relying on that, accounting may record the operations of the parties, which have decided to start “cryptocurrency mining” (Table 2).

Table 2. Accounting of the cryptocurrency operations

| No. | Content of the operation                                      | Debit  | Credit | Total sum, USD |
|-----|--------------------------------------------------------------|--------|--------|---------------|
| 1   | ASIC installation (power source and processor) or ASIC purchase | 152    | 209    | 279           |
| 2   | Debiting of tax credit with VAT                              | 644    | 631    | 46            |
| 3   | ASIC putting into operation                                  | 104    | 152    | 325           |
| 4   | Purchase of the software for ASIC                            | 154    | 631    | 107           |
| 5   | Debiting of tax credit with VAT                              | 644    | 154    | 17.8          |
| 6   | Putting into operation of the software (“firmware upgrade” – software) | 127    | 154    | 90            |
|     | Calculations for the services (mining – acc. 977)            |        |        |               |
| 7   | Electric power                                               | 92     | 631    | 61            |
| 8   | Premises lending                                             | 01     | 371    | 428           |
|     | Rent payment is recalculated, in advance                     | 371    | 311    | 36            |
| 9   | Payment for the Internet                                     | 92     | 631    | 3.6           |
| 10  | Remuneration settlements (for ASIC maintenance)              | 92     | 661    | 286           |
| 11  | National social insurance settlements                         | 92     | 651    | 62.8          |

Source: Generalized by the author.
Correct legal interpretation and recognition are the basic problems for the cryptocurrency recording in accounting. Due to that, in case of cryptocurrency recognition as a digital currency, it is proposed to use synthetic account 336 “Other means of digital currency” (virtual wallet); in case of cryptocurrency recognition as a variety of electronic money, it is proposed to use synthetic sub-ledger account 335.1 “Variety of electronic money”; if cryptocurrency is recognized as virtual goods, then one should use synthetic sub-ledger account 287 “Virtual goods”; if cryptocurrency is recognized as a financial investment, then one should use synthetic sub-ledger account 352 “Other current financial investments”; if one recognizes cryptocurrency as an intangible asset, then it is recommended to use synthetic sub-ledger account 127 “Other intangible assets”.

6. Conclusions.
Given the above, we can conclude that given the economic derivative of cryptocurrency, it can affect the economic and social components of any country. The European Union’s sustainable development strategy aims to develop the information component. Cryptocurrency is a hub that influences the development of telecommunications, digital economy, e-business and commerce. It can motivate countries around the world to develop all areas of activity for the control of such a specific asset.

At the economic level, cryptocurrency affects the way certain transactions are carried out. In the future, if it can be recognized internationally and locally, it will displace paper money and electronic money, as it is completely protected from counterfeiting. Under coronavirus, most bacteria exist on the surface of paper money, so people use an electronic payment format or cryptocurrency. You can pay with cryptocurrency using a QR code in your digital wallet. The amount of cryptocurrency affects the calculation of monetary aggregates in a country. Such a specific activity as mining allows the state to receive additional revenues from the taxation of such activities.

At the social level, humanity is constantly striving for self-development. Cryptocurrency is a future form of cash that can be easily and safely used in everyday life. It does not depend on the bank or a country, you can not worry, however, that will not be a country – will not be such money that if the bank goes bankrupt, it will remain guilty of deposits to certain individuals. The main thing here is that countries develop a mechanism for recognizing and controlling such assets. For example, most of the US population trusts cryptocurrency, because after President Donald Trump’s order to pay a certain amount of $1,200 per person to support a pandemic, many individuals were registered on the Coinbase cryptocurrency exchange people who started buying cryptocurrency in the amount equivalent to $1,000. That is, people try to keep their assets in such a digital format.

Thus, a virtual currency is a huge amount of computing power and digital assets. At this stage of technological development of mankind, cryptocurrency is gaining a stable position in the international market. Rapid development is causing further capacity growth and interest but may eventually lead to collapse. However, if the price stability of the cryptocurrency is achieved, it can be used in international transactions, not just for speculative gain. However, this issue will be directly related to the legalization of the new currency and its recognition by central banks as a means of exchange or storage of money. There is a need for further research to understand the basic conditions for the use of digital currency in the payments market.

References
Ammous, S. (2018), “Can cryptocurrencies fulfil the functions of money?”, Quarterly Review of Economics and Finance, vol. 70, pp. 38–51, doi: https://doi.org/10.1016/j.qref.2018.05.010
Andrusiv, U., Kinash, I., Cherchata, A., Polyanska, A., Dzoba, O., Tarasova, T. and Lysak, H. (2020), “Experience and prospects of innovation development venture capital financing”, Management Science Letters, vol. 10, pp. 781–788. doi: https://doi.org/10.5267/j.msl.2019.10.019

Baur, A. W., Bühler, J., Bick, M. and Bonorden, C. S. (2015), “Cryptocurrencies as a disruption? Empirical findings on user adoption and future potential of bitcoin and Co”, In: Janssen M. et al. (eds), Open and Big Data Management and Innovation, I3E 2015. Lecture Notes in Computer Science, vol. 9573, Springer, Cham, Switzerland, https://doi.org/10.1007/978-3-319-25013-7_6

Brukhanskyi, R. and Spilnyk, I. (2019a), “Cryptographic objects in the accounting system”, 9th International Conference on Advanced Computer Information Technologies, ACIT 2019 – Proceedings, Ceske Budejovice, Czech Republic, pp. 384–387, doi: https://doi.org/10.1109/ACITT.2019.8780073

Brukhanskyi, R. F. and Spilnyk, I. V. (2019b), “Crypto assets in the system of accounting and reporting”, The Problems of Economy, no. 2(40), pp. 145–156, doi: https://doi.org/10.32983/2222-0712-2019-2-145-156

Cherchata, A. and Andrusiv, U. (2018), “Reengineering of business-processes of enterprise as an instrument of their improvement and development”, Problems of modern science: Collection of scientific articles, Namur, Belgium, pp. 59–63.

Fomina, O., Moskhashova, O., Avhustova, O., Romashko, O. and Holovina, D. (2019), “Current aspects of the cryptocurrency recognition in Ukraine”, Banks and Bank Systems, vol. 14, no. 2, pp. 203–213, doi: https://doi.org/10.21511/bbs.14(2).2019.18

Hong, G., Yang, Z., Yang, S., Zhang, L., Nan, Y., Zhang, Z., Yang, M., Zhang, Y., Qian, Z. and Duan, H. (2018), “How you get shot in the back: A systematical study about cryptojacking in the real world”, Proceedings of the 2018 ACM SIGSAC Conference on Computer and Communications Security, Toronto, Canada, pp. 1701–1713, doi: https://doi.org/10.1145/3243734.3243840

Ievdokymov, V., Lehenchuk, S., Zakharov, D., Andrusiv, U., Usatenko, O. and Kovalenko, L. (2020), “Social capital measurement based on “The value explorer” method”, Management Science Letters, vol. 10, pp. 1161–1168, doi: https://doi.org/10.1504/IJBPM.2020.106107

Jumde, A. and Cho, B. Y. (2020), “Can cryptocurrencies overtake the fiat money?”, International Journal of Business Performance Management, vol. 21, no. 1/2, pp. 6–20, doi: https://doi.org/10.1504/IJBPM.2020.106107

Katsiampa, P., Moutsianas, K. and Urquhart, A. (2019), “Information demand and cryptocurrency market activity”, Economics Letters, vol. 185, doi: https://doi.org/10.1016/j.econlet.2019.108714

Kneysler, O., Andrusiv, U., Spasiv, N., Marynchak, L. and Kryvytska, O. (2020), “Construction of economic models of ensuring Ukraine’s energy resources economy”, 10th International Conference on Advanced Computer Information Technologies, ACIT 2020 – Proceedings, Deggendorf, Germany, pp. 651–656, doi: https://doi.org/10.1109/ACIT49673.2020.9208813

Nabilou, H. and Prüm, A. (2019), “Ignorance, debt, and cryptocurrencies: The old and the new in the law and economics of concurrent currencies”, Journal of Financial Regulation, vol. 5, no. 1, pp. 29–63, doi: https://doi.org/10.1093/jfr/fiz002

Pashkevych, M., Bondarenko, L., Makurin, A., Saukh, I. and Toporkova, O. (2020), “Blockchain technology as an organization of accounting and management in a modern enterprise”, International Journal of Management, vol. 11, no. 6, pp. 516–528, doi: https://doi.org/10.34218/IJM.11.6.2020.045

Pastrana, S. and Suarez-Tangil, G. (2019), “A first look at the crypto-mining malware ecosystem: A decade of unrestricted wealth”, IMC’19: ACM Internet Measurement Conference, Amsterdam, Netherlands, pp. 73–86, doi: https://doi.org/10.1145/3355369.3355576

Procházka, D. (2018), “Accounting for bitcoin and other cryptocurrencies under IFRS: A comparison and assessment of competing models”, International Journal of Digital Accounting Research, vol. 18, pp. 161–188, doi: https://doi.org/10.4192/1577-8517-v18_7

Rysin, V., Rysin, M. and Fedyuk, I. (2018), “Legal status of cryptocurrency as a financial instrument”, Efektivna ekonomika, [Online], vol. 11, available at: http://www.economy.nayka.com.ua/?op=1&z=6647 (Accessed 14 July 2021), doi: https://doi.org/10.32702/2307-2105-2018.11.7

Stovpova, A. (2018), “Classification of electronic money for accounting purposes”, Investytsiyi: praktyka ta dosvid, vol. 14, pp. 60–64.
Tarasova, T., Usatenko, O., Makurin, A., Ivanenko, V. and Cherchata, A. (2020), “Accounting and features of mathematical modeling of the system to forecast cryptocurrency exchange rate”, Accounting, no. 6, pp. 357–364, doi: https://doi.org/10.5267/j.ac.2020.1.003

Virtual Currency Schemes (2012), “European Central Bank”, available at: http://www.ecb.europa.eu/pub/pdf/other/virtualcurrencyschemes201210en.pdf (Accessed 14 July 2021)

Yatsyk, T. (2019), “Concept of crypto-assets in the financial accounting system”, Young Scientist, no. 2(66), pp. 295–298, doi: https://doi.org/10.32839/2304-5809/2019-2-66-64

Yiying, W. and Yeze, Z. (2019), “Cryptocurrency price analysis with artificial intelligence”, 5th International Conference on Information Management (ICIM), Cambridge, United Kingdom, pp. 97–101, doi: https://doi.org/10.1109/INFOMAN.2019.8714700

Цей твір ліцензовано на умовах Ліцензії Creative Commons «Із Зазначенням Авторства — Некомерційна 4.0 Міжнародна» (CC BY-NC 4.0).

This is an open access journal and all published articles are licensed under a Creative Commons “Attribution-NonCommercial 4.0 International” (CC BY-NC 4.0).