

Проблеми відображення операцій із цифровими активами в обліку

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Анотація. На сучасному етапі функціонування цифрової економіки змінюються підходи до використання готівки. Усе більше використовуються для замовлення послуг та оплати товарів в Інтернеті електронні безготівкові розрахунки. Тому важливу цінність цього процесу для облікової системи має відображення таких операцій в обліку. Використовуючи електронні гаманці та середовища електронного бізнесу, відображаючи транзакції з криптовалютою, перераховуючи кошти, майнінг, інвестуючи в активи з високим ризиком – усе це вимагає вивчення способу обліку таких операцій. Основна мета дослідження полягає у науковому обґрунтуванні підходів до відображення операцій із цифровими активами в обліку та визначенні шляхів надходження криптовалюти на підприємство. У процесі наукового дослідження були використані такі методи наукового пізнання як опис, аналіз і синтез. Встановлено, що не існує єдиного підходу до визнання та обліку криптовалют. Доцільно розглядати криптовалюту, яка належить до нематеріальних активів, лише в умовах довгострокових інвестицій. Іншим вектором розвитку є ідентифікація криптовалюти як ресурсу або запасів та облік її як запасів. Визначено, що, насамперед, перед використанням криптовалюти необхідно економічно обґрунтувати певний метод оцінки криптовалюти на законодавчому рівні. Надалі це необхідно для компаній, які будуть використовувати криптовалюту, щоб мати можливість постійно використовувати метод у своїй обліковій політиці. Автор проаналізував форми електронних грошей і виявив, що вони можуть існувати у вигляді інформації посеред комп'ютерних мереж (на основі мережі) і можуть мати додатковий зв'язок із платіжною смарт-карткою (на основі картки). З метою ідентифікації суб'єкта бухгалтерського обліку автор визначає, що криптовалюта має обліковуватись як нематеріальний актив, тоді як гаманці для зберігання криптовалюти варто обліковувати як інші необоротні матеріальні активи

Ключові слова: облік криптовалюти, господарські операції, майнінг, блокчейн, цифрова економіка

Problems of Reflecting Transactions with Digital Assets in Accounting

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Abstract. At the present stage of functioning of the digital economy, approaches to the use of cash are changing. Electronic non-cash payments are used to order services and pay for goods on the Internet increasingly often. Therefore, reflecting such operations in accounting constitutes an essential value for the accounting system. Using e-wallets and e-business environments, mapping cryptocurrency transactions, transferring funds, mining, investing in high-risk assets – all this requires learning the accounting methods for such transactions. The main purpose of this study is to scientifically substantiate approaches to reflecting operations with digital assets in accounting and determine the ways of receiving cryptocurrency by the enterprise. This study employed such methods of scientific cognition as description, analysis, and synthesis. It is established that there is no single approach to the recognition and accounting of cryptocurrencies. It is advisable to consider a cryptocurrency that belongs to intangible assets only in the context of long-term investments. Another development vector is identifying cryptocurrencies as a resource or inventory and accounting for them as inventory. It is determined that, first of all, before using cryptocurrencies, it is necessary to economically justify a certain method of evaluating cryptocurrencies legislatively. In the future, this will be necessary for companies that will use cryptocurrency to have the opportunity to continuously use this method in their accounting policies. The author of this study analysed the forms of electronic money and found that they can exist as information between computer networks (network-based) and can have an additional connection with a smart payment card (card-based). To identify the subject of accounting, the author determines that cryptocurrency should be considered as an intangible asset, while wallets for storing cryptocurrency should be considered as other non-current tangible assets

Keywords: cryptocurrency accounting, business operations, mining, blockchain, digital economy

Introduction

Modern information technology is changing the world. Blockchain technology is gradually developing, based on which it becomes possible to investigate issues related not only to cryptocurrency, but also to medicine, management, and the conduct of elections. That is, to use blockchain technology for the benefit of humanity. The modern transformation of the economy requires

a rapid response to the processes transpiring in it. Such concepts as accounting digitalisation and multi-level digitalisation are being introduced. Therefore, the modern vision of accounting and taxation is changing and improving. The emergence of new digital assets in the form of cryptocurrencies creates a challenge to the accounting system regarding their reflection in it. Any

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activity must be defined, recognised, and transactions – be subject to taxation, since taxes are the source of replenishing the budget [1].

Considering modern approaches to ordering services and paying for goods without leaving the home, non-cash payments become of particular importance, and necessitate the investigation of such approaches to reflect transactions in the conventional accounting system. In the context of conducting e-business, when using electronic (digital) wallets, there is a need for accounting for transactions with them. One needs to establish which ledgers to use to reflect a certain number of such wallets. Furthermore, one needs to understand which ledgers to use to reflect activities such as mining, and how to classify such activities (financial, investment, or basic). Making investments in highly liquid, high-risk assets – all this requires investigating approaches to reflect such operations in accounting.

If an enterprise controls resources based on previous experience and expects to receive economic benefits in the future, then such resources are assets. Disputes continue among researchers regarding the economic nature of cryptocurrencies. Cryptocurrency should be understood as a special type of intangible assets that an enterprise can use for investment. That is, a cryptocurrency constitutes a non-monetary asset that has no material form. An asset can be considered any resource, the value of which can be reliably estimated, and its use is expected to bring benefits in the future. It is advisable to consider whether a cryptocurrency belongs to intangible assets only in the context of long-term investment. Given the high volatility of the cryptocurrency market and its constantly changing value, the process of evaluating such an asset becomes very complex. And determining the real value of one Bitcoin depends on the resources spent (for example, the power of equipment for generating a Bitcoin, internet speed, electricity costs, the complexity of the reward redistribution system, the main characteristics of the pool, etc.) [2].

Apart from the fact that a cryptocurrency can be an intangible asset, under certain conditions it can also be identified as a stock and reflected in other ledgers. That is, if the cryptocurrency is in the process of mining with the subsequent purpose of selling it, then it is proposed to apply the provisions of IFRS 2 “Reserves” [3]. This approach requires some approaches and discussions among researchers. Since cryptocurrency has a high risk, which is inherent in changes in value, it cannot be classified as a standard asset. As part of the company's funds, there are deposit funds, cash in the cash register, funds in the current account, highly

liquid investments, securities, precious metals. That is, these are assets that can be quickly converted into cash, or they are cash and have high liquidity.

It is very difficult to make a correct assessment of the value of cryptocurrencies in the accounting system at a certain date of drawing up a balance sheet or conducting a transaction. The exchange rate difference when buying or selling can be significant, since the market value of a cryptocurrency depends on the supply-demand mechanism in the closed market of using this tool [4]. For example, in August 2019, 1 Bitcoin was worth just over 10,000 US dollars and in October of the same year, its value was 8,000 US dollars. About 50-80% of all cryptocurrency mining capacity is concentrated in China, and therefore the ban on cryptocurrency mining in eastern China has adversely affected the value of Bitcoin and digital assets [5]. First of all, before using cryptocurrency, it is necessary to economically justify a certain method of evaluating cryptocurrency at the legislative level. In the future, this is necessary so that companies that will use cryptocurrency can reflect a certain method in their accounting policies. In the academia studying accounting, which include O. Petruck and O. Novak [6], O. Augustova [7], V. Fostolovich [8], S. Lecgenchyc and A. Semenek [9], T. Tarasova, O. Usatenko, A. Makurin, V. Ivanenko and A. Cherchata [10], discussions continue concerning the valuation method to use, since for various purposes of using cryptocurrency, its value plays an essential role. For example, the value of a cryptocurrency can be determined by the cost of resources spent, or by revalued cost; by net realisable value (for mining purposes); by fair value for traders and those who want to conduct certain operations on a crypto exchange. Consequently, the professional competencies of an accountant in the context of blockchain technology are acquiring a fundamentally new level of development.

Among the Ukrainian researchers, it is worth noting O. Petruck and O. Novak, who investigated the essence of cryptocurrency and studied the features of accounting for such an asset. They distinguished the concepts of cryptocurrency and electronic money. These authors also provided examples of accounting for operations related to cryptocurrencies. They proved that cryptocurrency does not correspond to the term “money”, and therefore it cannot be reflected in the balance sheet of the enterprise under the item “Cash and their equivalent” [6]. I. Derun, I. Sklyaruk investigated the classification of cryptocurrencies, studied its features and types. The authors analysed the model of decentralised digital currency schemes and covered their main

characteristics. They proposed an original approach to reflecting business operations with cryptocurrency in ledgers [11].

O. Augustova considered the economic and legal essence of cryptocurrencies. She investigated the stages of development of digital currency on the world market. This author suggests defining cryptocurrency as a virtual currency and equating it with the means of payment of business entities [7]. V. Fostolovich investigated the issues of the digital information space and the necessity of solving the issue of accounting and taxation of operations with cryptocurrency [8]. The author suggests considering cryptocurrency as a financial instrument that should be evaluated at fair value. He notes that all operations related to the generation of income and expenses incurred should be controlled by the tax administration, which should also monitor existing wallets for the safety of any cryptocurrency.

Despite all the existing developments of researchers and the increased interest in such a specific asset as cryptocurrency, as well as the rapid development of information technology, requires numerous additional studies of this asset. It is necessary to obtain unambiguous answers to the frequently asked questions related to the recognition, calculation of value, and evaluation, as well as reflection in ledgers and understanding of the tax base to receive tax revenues to the state. Furthermore, the National Bank of Ukraine does not recognise cryptocurrency as a means of payment, which makes its use illegal. But at the same time, converting cryptocurrencies into national monetary units and vice versa does not cause violations in terms of the legislation of Ukraine [8].

Materials and Methods

This study is based on a comprehensive analysis of events in the world of cryptocurrencies. The research was performed in two main areas. The first area is the analysis of previous studies related to the theoretical premise of the emergence of cryptocurrencies. The main method of research is the empirical method, which was employed to observe changes in the attitude of countries towards cryptocurrencies. The measurement process also provided an insight into the scope of the Bitcoin market. As a result of researching the literature, it was established that cryptocurrency as electronic money constitutes a non-personalised payment instrument and rotates outside the banking system in electronic form. Therefore, this is precisely what influences the fact that the state cannot control this process, making the national banks of many countries suspicious of such money.

As for the second area, the study investigated the legal status of cryptocurrencies in Ukraine and abroad.

It was established that the lack of state control is conditioned upon the imperfection of the system of legal regulation of the status of cryptocurrencies in Ukraine. The following hypotheses were put forward:

- legalisation and recognition of modern funds as means of payment will make this process more controlled and regulated;
- transparency of cryptocurrency transactions on exchanges will increase confidence, as well as create opportunities for improving the tax system to tax such transactions and this type of activity.

In the course of the study, the description method was used to record certain features of specifying cryptocurrency records in accounting. This provided a greater insight into what the digital assets (cryptocurrencies) should be recognised as. A considerable number of scientific papers were analysed, indicating in them the basics of solving a scientific problem related to the identification of the accounting object. The identification and recognition of an object in accounting as a certain type of asset influences its further accounting and determination of the tax base and further specification in the financial statements.

Results and Discussion

Thanks to gadgets and the global network, business requirements are evolving. A new approach to its management, namely e-business, is being introduced. At the same time, the approach to making payments for goods, works, and services is evolving [12]. Approximately during 1998-2002, the electronic payment system WebMoney and Yandex funds were created. Much later, namely in 2007, the Qiwi settlement service was created. Apart from such systems, there are also EasyPay, PayPal, GlobalMoney, Maxi, and many others [13]. In 2008, certain changes were introduced concerning the use of modern cash in the settlement procedures. It was that year when a digital currency, namely Bitcoin, was first used to calculate and exchange 10,000 Bitcoins for two pizzas [12]. When keeping records, it is proposed to separate the concepts of cryptocurrency and electronic money. Focusing on the fact that electronic money can be immediately converted into money from the country where it is used. For example, the authors of this study consider the WebMoney electronic payment system. Until 2018, this system allowed creating a WMU-type wallet, which was the title sign equivalent to the Ukrainian Hryvnia. And WMZ is the equivalent of the US dollar. WMX in this system is designated as an analogue of Bitcoin, where it is possible to exchange 1 WMX for 0.001 BTC (as of October 2019, this is almost 8.2 US dollars).

Having analysed the form of electronic money, it was found that they can exist in the form of information in the middle of computer networks (*network-based*), as well as have an additional connection with a smart payment card (*card-based*). Cryptocurrency is a certain amount of information in electronic form, which is represented using a cryptographic key with a size of 256 bits, in which 33 characters are encoded, for example, 1bq9qza7fn9sncyjqb3zcn46bibtk4ee – the first digit: one or three is not included in the calculation. Thus, in this matter, cryptocurrency is similar to electronic money [14]. From the standpoint of anonymity, electronic money comes with certain requirements for user identification, i.e., personalisation and without such requirements (anonymous). Yet again, there are some similarities in this issue, namely cryptocurrency is completely anonymous. It is not possible to identify who and to whom such funds were transferred, but users can make sure that they received funds from a particular person.

If one analyses the issuer of funds, then electronic money can be fiat, included in the state financial system as separate payment subsystems and denominated, and always in the national currency of a particular country. At the same time, they can be a private currency that recognises their value in this state, but always needs to be exchanged for the currency of the state, for example, as WMR – roubles and WMU – Hryvnia. Any cryptocurrency has no issuer. This system functions in such a way that it is possible to increase the number of funds in a logarithmic progression until the figure of 21 million is reached. Therefore, to ensure a sufficient amount of funds, bitcoin is divided to the eighth decimal place. The smallest unit of measurement is 0.00000001 BTC and is called Satoshi. On currency exchanges, traders know that the smallest unit of measurement for changes in the exchange rate is 0.0001 and is called Peeps [15].

Most foreign companies use cryptocurrency for investment purposes, or accept it as a means of payment. This has led to an urgent need for managers to develop accounting standards, consider this feature of the modern economic world, and develop mechanisms to regulate how they are reflected in financial statements. The lack of particular guidelines and methodology has led to various accounting methods used in practice, which have created considerable issues for developers of financial statements. This has compelled the management to understand exactly where to reflect cryptocurrency, since independent decision-making destroys such stages of accounting as continuity,

measurement, registration, which contributes to the emergence of scraps of accounting procedures on the market. Furthermore, these challenges can lead to revenue management opportunities or increased information asymmetry between stakeholders and organisations. In the future, this leaves a certain imprint on the comparison of enterprises with each other, for example, at the level of income, because some enterprises will use and account for cryptocurrencies, while others will not recognise it. At the same time, any cryptocurrency can be exchanged for real money, that is, get additional income that must be taxed [15].

Currently, there is a debate among researchers about what to consider cryptocurrency assets and the cryptocurrency itself. Two approaches were developed for accounting and taxation of such a specific asset. The first is to recognise cryptocurrencies as commodities that can be exchanged for other commodities. Then such transactions should be subject to the basic value-added tax rate of 20%. The second is to define cryptocurrency as a financial instrument and consider it as a type of modern money. When performing taxation, it is necessary to use the income tax rate of 18% for enterprises or for individuals to apply the personal income tax rate of 18%.

To solve the problems associated with accounting and taxation of cryptocurrencies, it is necessary to define the object. For example, the committee on International Financial Reporting Standards recognised that cryptocurrency cannot be identified with cash or financial assets, but suggested that it should be classified as an intangible asset [16]. The International Financial Reporting Interpretations Committee (IFRIC) is a fairly influential body in the international financial system. According to the IFRIC's conclusions, cryptocurrency constitutes a non-monetary asset without physical embodiment [16]. Cryptocurrency cannot be considered securities, since it does not give the owner contractual exchange rights. The authors of this study emphasise that the IFRS document on the status of cryptocurrencies is of a recommendatory nature and reflects only the Committee's opinion. Back in 2014, the State of New York recognised Bitcoin as intangible property, and the State of Nevada also signed a corresponding agreement on its recognition.

Until the legal status of cryptocurrencies in Ukraine is determined, it is not possible to single out a common opinion among researchers concerning the accounting of transactions with this type of asset. Factually, any cryptocurrency constitutes a source code, which is a cryptocurrency key, and it is this key that is the object of

ownership rights. It can be used as a means of exchange that functions in the blockchain system as accounting units. Furthermore, all assets related to cryptocurrency are stored on separate wallets. For example, Bitcoin – BTC is stored on emcd.io, and the Bitcoin Cash – BCH is stored in the pool.viabtc. In other words, it is necessary to reflect the wallet as a non-current tangible asset, and any cryptocurrency as an intangible asset.

Thus, it can be concluded that in accounting, transactions related to cryptocurrency should be reflected as ordinary intangible assets. That is, the acquired (created) intangible assets must be credited to the balance sheet of the enterprise at the initial cost, comprising the cost (acquisition) and other expenses associated with this asset. The question of the cost of accounting for cryptocurrencies is problematic, since in Ukraine and in the world, there are no clear standards in the field of cryptocurrencies. Valuation of intangible assets constitutes a very complex issue, which is conditioned upon the specificity of this category, the lack of valuation standards, an underdeveloped active

market that is ever-evolving, new cryptocurrencies are being designed – all this hinders an adequate assessment. Too strict regulation of the current accounting legislation in developed countries such as the United States, Germany, Canada, and the United Kingdom does not contribute to the development of an objective assessment of the value of cryptocurrencies [17].

Thus, cryptocurrency and the establishment of ownership rights to its use, management of a particular enterprise or individual for accounting purposes is understudied. It is proposed to determine the ways of receipt to understand the historical value of cryptocurrency, registration and its further application. It is established that an intangible asset should be identified by various ways of receipt: exchange, gratuitous receipt, contribution to the authorised capital by a participant, receipt as a result of a merger of enterprises. Table 1 demonstrates the main options for receiving cryptocurrency to the enterprise, reflecting the main ledgers to be used.

Table 1. Main ways of receipt and options for reflecting cryptocurrencies in accounting

Seq. No.	Receipt paths	Rating	Ledgers
1	Exchange	Exchange for a similar IA* Exchange for non-similar IA*	127 "Other intangible assets" – cryptocurrency 117 "Other non-current tangible assets" – cryptocurrency wallet
2	Free receipt	Initial cost-fair value at the date and time of the transaction	424 "Non-current assets received free of charge"
3	Participant's contribution to the authorised capital	Initial cost = fair value agreed by the founders	D 127 K 46
4	Reception as a result of a merger of enterprises	Initial cost = fair value	
5	Cryptocurrency generated by its own information and technological means	The cost of mining expenses (Expenses for ASIC purchases; electricity costs; internet traffic costs)	D 425 K 127

Note: *IA – intangible asset

Source: compiled by the author based on [7; 12]

O. Augustova [7] suggested accounting for cryptocurrency as electronic money, using accounts 315 "Special accounts in national currency", 127 "Other intangible assets". Considering cryptocurrency as a financial investment, it is necessary to use items 143 "Investments to unrelated parties", 352 "Other current

financial investments" or account them as part of accounts receivable per item 377 "Settlements with other debtors". And in the balance sheet, the value of such assets should be reflected in item 1165 "Money and its equivalent" [12].

Control over the turnover of cryptocurrencies

should be carried out by the National Bank of Ukraine, and all transactions with it must be taxed. Cryptocurrency is not a completely legal tender, as most companies in the world do not yet work with it. It is also not recognised as a means of payment in many countries at the legislative level. In particular, the Central Bank of Finland stated that Bitcoin is neither a currency nor even an electronic means of payment, since such objects must have an appropriate issuer responsible for their activities. The Central Bank of China also banned any operations with virtual currency, noting that this is an unlawful means of payment that has no legal status. Notably, Bitcoin does not even have a legitimate developer (only their alias is publicly known), and therefore this confirms that this object is outside the legal framework so far [18].

The way cryptocurrency is recognised will directly affect its further accounting, crediting to the company's balance sheet and further operations related to taxation. If a legislative decision is made to recognise cryptocurrency as an intangible asset, then it is worth applying the usual operations for this procedure [19]. And if it is recognised and credited to modern money, then income tax or personal income tax should be used. The solution to the tax process lies in determining and improving the legal status of cryptocurrencies, amending the Tax Code of Ukraine. Introduction of a single mechanism for recognising the object of accounting and the tax base. After certain changes associated with the recognition of a cryptocurrency, it is necessary to determine its place in accounting. For example, if cryptocurrencies are considered money, then it should be reflected in line 1165 "Money and its equivalent" [12]. If cryptocurrency is defined as other current financial investments, then the account 352 should be used, and respective reflection be made in the financial statements in item 1160 "Current financial investments" [7]. For accounting purposes, it is appropriate to identify the value of cryptocurrencies available on the wallet at the disposal of the enterprise at each reporting date [20], which determines further research towards evaluating, re-evaluating, markdown, and revaluation of cryptocurrencies.

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Conclusions

Without understanding how to recognise cryptocurrency in accounting, it is impossible to carry out accounting itself. It is impossible to determine the fair value of such an asset, and use certain ledgers with subsequent reflection in the financial statements. Therefore, Ukraine needs to develop and implement regulations that can govern the turnover of digital assets on its territory. Furthermore, it is necessary to change the terminology, since it has not yet been determined what cryptocurrencies, digital assets, and digital currency are and how to distinguish them. It also remains unclear what a cryptocurrency is to be considered as – an intangible asset, a stock, a financial investment, cash, etc. For the development of a transparent cryptocurrency market, it is necessary to create the appropriate legal conditions. The first step, which confirms the state's readiness to work on the development of legislative and regulatory frameworks that will ensure transparency and quality of relations between investors and market participants with cryptocurrencies, was taken in the form of a Concept of State Regulation of Operations with Cryptocurrencies in Ukraine.

Notably, in Ukraine, the issue of developing statutory regulation of cryptocurrency operations and relations is urgent. The lack of legal regulation of operations with encoded currency does not allow the National Bank of Ukraine and other bodies to control, guarantee, and protect against abuse of such operations, although the fact of their implementation in the business sector is indisputable. This requires amendments to the Tax Code of Ukraine and the development of a tax system for this process. The legislative vacuum is a springboard for abuse of power and a hindrance of the country's development. It is crucial that the legal side keeps up with the technological side, for effective scaling of business in Ukraine and interaction of regulatory authorities with such a business. Given the evolution of economic relations in society, the tax system should also evolve. Prospects for further research are to develop the accounting display of cryptocurrency depending on the method of its receipt to the owner, for example, by mining, exchanging for money or another asset. Separate research is required on the taxation of operations with cryptocurrencies.

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