

**ОБЛІК, АНАЛІЗ ТА АУДИТ. СТАТИСТИКА. МАТЕМАТИЧНІ МЕТОДИ,  
МОДЕЛІ ТА ІНФОРМАЦІЙНІ ТЕХНОЛОГІЇ В ЕКОНОМІЦІ**

УДК 657.6:004

JEL Classification: M40, M41, D24

DOI: [https://doi.org/10.32515/2663-1636.2023.9\(42\).131-141](https://doi.org/10.32515/2663-1636.2023.9(42).131-141)**Volodymyr Muravskiy**, Professor, Doctor of Economics (Doctor of Economic Sciences)**Pavlo Denchuk**, Associate Professor, Phd in Economics (Candidate of Economic Sciences)**Oleh Reveha**, Graduate student*West Ukrainian National University, Ternopil, Ukraine***Inventory control and accounting valuation of electronic money and crypto assets in electronic transactions**

The monetary basis of the digital economy is electronic money and cryptographic objects that have specific characteristics, consideration of which significantly complicate accounting and control. In order to ensure the identification, inventory and valuation of crypto assets, it is necessary to optimize the methodology and organization of accounting for electronic money transactions in the digital economy. The purpose of the article is to improve the inventory control and accounting assessment methodology from the point of view of the current and future value of electronic and cryptographic money in the context of electronic money transactions.

The article substantiates the possibility of a permanent automatic inventory of electronic and cryptographic money funds based on the information synchronization of crypto exchanges (electronic transactions operators) with specialized software for automation of accounting. The procedure for carrying out inventory control of electronic money and cryptocurrencies in terms of types of electronic transactions has been improved. The features of accounting valuation of crypto assets characterized by intangible nature, significant volatility, speculative nature, confidentiality, decentralization, etc. have been determined.

The methodology of accounting valuation of crypto assets has been optimized with the determination of their initial and future value in the context of distinguishing types of electronic transactions, as well as the need to revalue accounting objects used as a means of circulation or as investment and financial instruments. The methodology for valuation of newly created crypto assets has been clarified in terms of taking into account the costs of labor and social insurance, electricity and utilities, and depreciation of equipment related to the maintenance of the electronic transaction system. The use of the author's proposals will contribute to reliable and timely accounting of electronic and cryptographic money funds.

**accounting, electronic money, cryptocurrencies, crypto assets, inventory, valuation, electronic transactions**

**Statement of the problem.** The formation of a digital economy, the fundamental element of which is electronic and cryptographic money funds, requires the improvement of information processes. The operation of electronic money and crypto assets involves the exchange of information flows in the system of electronic transactions. The information core of the electronic transaction system is accounting, which integrates information processes around the common goal of controlling and evaluating electronic and cryptographic funds from the standpoint of present and future value.

Taking into account the intangible origin, significant volatility, decentralization, and confidentiality, the identification, inventory and valuation of crypto assets in accounting is complicated. Accounting is facing significant challenges in providing an economic assessment of the processes taking place in the system of electronic money transactions. The need for transformation of the methodology and organization of accounting in the context of accounting reflection of money transactions with the use of electronic money and cryptocurrencies determines the actuality of research in this area.

**Analysis of recent research and publications.** The problem of determining the current and future value of electronic money and cryptographic objects is actively discussed by the scientific community. In particular, foreign and domestic scholars in the field of

information and communication technologies put forward proposals to improve the valuation of crypto assets in the following areas: O.Pakhnenko at al. – the need to systematize and take into account all the factors involved in the formation of value [5]; Garrison Song – refusal from determination of their internal value, which leads to gradual dedollarization of the global economy [9]; Xinyi Zhang – the use of neural network techniques in assessing the market value of cryptocurrencies [15]; Ed Lehner, John Ziegler and Louis Carter – applying their own concept of valuation of crypto assets of the next generations, which takes into account the promising factors of the internal and external environment of enterprises [2]; Savva Shanaev at al. – accentuation of attention not only on the economic value, but also on the network and social usefulness of cryptocurrencies in the context of blockchain technology [6]; Zhang Xingjian – provisioning of the optimal ratio between the choice of valuation method and the growth of investment risks [14]. Despite the significant achievements of scholars in the field of crypto asset valuation, scientific works do not take into account the accounting nature of the formation of the value of electronic and cryptographic funds.

The need for improvement of the valuation of crypto assets from the position of accounting is partially positioned by the following scholars: Piotr Druszcz and David Procházka [10], Mustafa Alici and Serap Yanik [3], Z.-M. Zadorozhnyi provisioning at al. [13], L. V. Shevchenko [8], R. F. Brukhansky, and I. V. Spilnyk [12] and other authors. However, such developments are episodic and do not cover all aspects of the accounting valuation of crypto assets in the context of their relationship with inventory control.

**Statement of the objective.** The purpose of the article lies in improvement of the inventory control and methods of accounting valuation from the standpoint of the present and future value of electronic and cryptographic money funds in the context of electronic money transactions.

**The main material.** On the basis of information synchronization of software for digitalization of accounting and control processes with the system of electronic money system, it is possible to organize a complete permanent inventory. Full inventory control covers all monetary transactions involving cash and crypto assets, regardless of their type and form of execution. With the use of artificial intelligence technology, it is possible to automatically monitor electronic money transactions in order to control their expediency, efficiency, and legitimacy. Artificial intelligence is able to analyze the content of each monetary transaction and, in case of deviations or violations, inform the officials responsible for electronic transactions.

Since automatic monitoring is carried out on a constant basis, a permanent inventory of electronic funds and cryptocurrencies is possible. For inventory of the availability and movement of funds, it is necessary to check the primary documents and accounting registers related to electronic monetary transactions. Such primary documents from the point of view of accounting and control of electronic transactions are information messages from crypto exchanges, electronic wallets and other electronic services. The system of management of electronic monetary transaction is capable of providing data on the state of cash balance and its changes in real time. Data from the system of management of electronic monetary transactions is expedient to recognize by unconditional legal evidence of the facts of monetary transactions.

Self-inventory is implemented on the basis of operational primary information on cash balances and cash flows. In other words, the software for accounting automation and control conducts a permanent check of the compliance of accounting information and cash balances on the accounts of crypto exchanges. When conducting electronic monetary transactions, data changes are simultaneously made in the crypto exchange management system and accounting.

Therefore, when detecting as a result of inventory of deviations between actual and accounting data, it can be argued that financial fraud or errors have occurred. It is advisable to promptly notify the company's personnel responsible for electronic transactions of the discrepancies detected in the context of a permanent self-inventory. Immediate notification ensures a timely response to threats to the funds owned by the business entity. Unauthorized actions or mistakes of the company's employees, third-party fraud and cyberattacks, etc. may lead to such threats. Officials are obliged to stop, block or clarify the process of implementing an electronic transaction. Full permanent inventory control minimizes the time between the occurrence of a crisis situation due to a threat and the reaction to it, which ensures the avoidance or minimization of monetary losses of an enterprise.

The balance of electronic money and cryptocurrencies on the accounts is subject to inventory control. Accounts in electronic and cryptocurrency wallets may have different purposes. In particular, some electronic transaction services distinguish between general, main, operational, trading, financial, deposit, investment, referral and other types of accounts. When checking the state of account balances, it is necessary to take into account that funds belonging to a company may be simultaneously reflected in different accounts. The parallel storage of funds in several accounts at the same time fundamentally differs the methodology of electronic money transactions from traditional banking transactions. For example, electronic money and cryptocurrencies received by the owner in the form of bonus accruals can be used for investment and financial transactions with reflection on the respective accounts, but without the right to exchange for fiat money for transfer to bank cards. Accordingly, bonus cash will not be reflected on the main or operating account.

The similar situation with funds that are currently involved in futures trading and are reflected in the financial account with the possibility of promptly closing the trade in favor of option trading. Such electronic money and cryptocurrencies may be simultaneously reflected on the balance sheet of the financial and investment account without accessibility from other types of accounts. In accounting, such electronic money and cryptocurrencies, despite being simultaneously credited to the balance sheets of different accounts, are recorded once. For the purpose of proper inventory control, it is important to form a general balance sheet of funds, in which they are initially reflected when received (generated) by the owner. With the purpose of proper inventory control, it is important to form a general balance sheet of cash, in which they are initially reflected when received (arising) from the owner. With this purpose, crypto exchanges use a general account of electronic and crypto assets, which is formed not by summing the total balances of all accounts, but by eliminating duplicate balances and internal settlements.

For the purposes of accounting and control of electronic transactions, it is advisable to distinguish between the following processes: replenishment of the current balance for electronic transactions; acquisition of electronic and cryptographic funds at market trading; receipts from payers; movement between different accounts; receipt on credit; placement on deposit; mutual exchange and withdrawal of crypto assets from the electronic transaction system; emission and mining, etc. (Fig. 1).

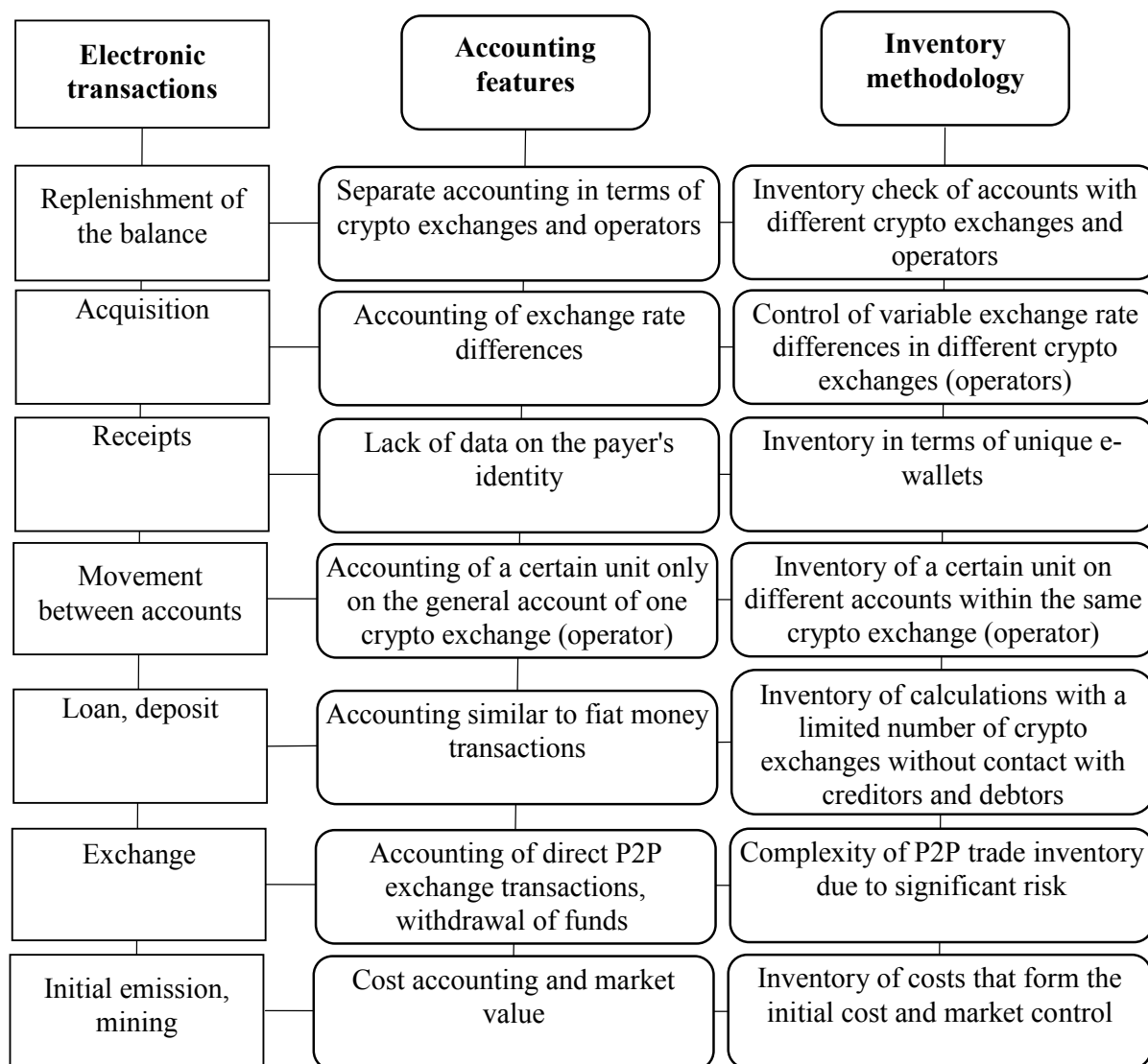


Figure - 1. Electronic transactions with the use of electronic money and cryptocurrencies from the point of view of their accounting and inventory control  
 Source: compiled by the authors

Quantitative and summary analytical accounting and the presence of exchange rate changes is common to all electronic money transactions. At the same time, each of the money transactions is characterized by special accounts that require the use of variable inventory control procedures.

In particular, when replenishing an electronic or crypto wallet account, in addition to the traditional deposit of funds from a bank card, money transactions between crypto asset operators within a single blockchain network are possible. In this case, it is advisable to separate different accounts for funds managed by different operators in the accounting and control system of electronic transactions. For example, it is advisable to use different accounts to account for bitcoin in different crypto exchanges, which is an important requirement for reliable inventory and valuation of funds.

This is also important with variable value of crypto assets from different operators of electronic transactions. The exchange rate of certain electronic money, as well as the market value of crypto assets, similarly to the cash foreign exchange market, may differ from one participant to another. However, unlike the officially set foreign exchange rate by the central

bank, there is no centralized price regulation in the electronic and cryptographic money market. Therefore, when crypto assets are received from payers, it is necessary to establish their fair value based on the professional judgment of the members of the expert commission. The value of the received crypto assets may be determined on the basis of the data of the crypto exchange which is serving the company or on the basis of the average value between the leading operators of electronic and cryptographic funds on the market.

When electronic and cryptocurrency funds are received, it is also difficult to verify the identity of the payer, as blockchain technology ensures the confidentiality of transactions with crypto assets. Therefore, in the accounting and control of electronic transactions, along with (or instead of) analytical information about the payer (recipient) of funds, it is advisable to indicate the unique number of the electronic (cryptographic) wallet of the participant in the monetary transaction.

The data on individual numbers of electronic and cryptocurrency wallets are advisable to be used as end-to-end analytics in accounting and control. Since the number of the wallet (account) for receipt and withdrawal of electronic money and cryptocurrencies is unique in the global system of electronic transactions, such data codification is a universal method of ensuring analytical accounting for all participants in electronic mutual settlements.

However, the above analytics of accounting and control of electronic money transactions cannot be applied to deposit and credit transactions with electronic and cryptographic funds. Unlike the financial and banking services market with a large number of participants attracting funds for deposits and issuing loans, the crypto market is limited. Deposit and credit services are provided only by the service operator (crypto exchange) of the electronic transaction system. Therefore, a company can only choose a specific currency or cryptocurrency to be placed on deposit or taken on credit. In this case, the operator of electronic or cryptographic funds is the only debtor and creditor for an enterprise in respect of deposit and credit transactions. Instead, the accounting representation of deposits and loans in the accounts does not almost differ from transactions with fiat money.

Very important way of attracting credit funds is P2P. However, inventory and valuation in P2P trading, which involves the direct exchange of crypto assets and fiat money without the direct participation of a crypto exchange, is problematic. Such electronic money transactions are extremely risky because similar to trading via the Internet, there is always a possibility that one of the parties will fail to fulfill the transaction. Since there is no legal confirmation of an unconditional agreement concerning exchange funds, and crypto exchanges have no control mechanism, P2P electronic transactions are an unreliable means of money exchange.

In case of loss of electronic and cryptographic funds, it is necessary to form a commission involving accounting, investment and technical employees who, based on professional judgment and data from the crypto exchange, evaluate the company's assets. When using data from the electronic transaction system on crypto assets on the open market, it is advisable to use the value at the time of the loss of accounting objects and their current value when writing them off from the accounting accounts. When the fact of theft, misuse, fraud, etc. is confirmed, crypto assets are written off to the company's expenses at the current price. In the future, during the work of the write-off commission, it is possible to establish the guilty internal or external person, compensation of the loss by a crypto exchange or a risk hedging firm, which makes it possible to reflect in the accounting the corresponding income for the compensation of losses or the return of lost assets. If it is not possible to identify the guilty party, the commission makes a final assessment of the lost electronic or cryptographic funds at fair value and adjusts the relevant accounting accounts. The results of the expert commission's work on writing off the lost assets with the reflection of the relevant expenses

and income should be documented in an accounting certificate, which is the main primary document to ensure the legitimacy of the relevant electronic transactions in accounting.

It is also advisable to involve an expert commission in assessing the riskiness of each fact of P2P exchange. P2P trading in cryptocurrencies can be recommended only between reliable partners or in the close physical presence of all participants in electronic transactions. The business of third-party institutions that provide services for the monetary exchange of electronic money and cryptocurrencies for paper or electronic fiat funds is organized on the principles of P2P trading. Such transactions are subject to exchange fees, that are reflected in accounting similarly to foreign currency exchange.

In this case, the value of the received electronic money or cryptocurrencies will be equal to the value of the transferred objects in the course of the electronic money exchange transaction. When exchanged for fiat monetary assets, crypto assets are valued at the cost of sale or purchase, respectively, with the determination of exchange rate differences. To determine positive or negative exchange rate differences, it is advisable to use the corresponding official prices on the spot market from the crypto exchange. Accounting for exchange rate differences in transactions with electronic and cryptographic funds can be performed similarly to the accounting reflection of differences in fiat currency exchange rates.

However, in electronic money transactions, multiple conversions are possible with successive exchange rate differences. Since, according to the national legislation, all financial and economic processes are measured in a single monetary unit, electronic money and crypto assets, regardless of the specifics of exchange transactions, must be recorded in the national currency. Therefore, control in electronic money transactions requires the correctness and consistency of electronic money and cryptocurrency conversions from an accounting perspective. Specialists responsible for electronic transactions are advisable to choose fiat and virtual money in exchange transactions that will be useful for the financial and economic activities of an enterprise in the future. In order to reduce the number of money conversions, exchange fees and exchange rate differences, it is advisable to plan the need for different electronic money and cryptocurrencies. In other words, it is advisable to exchange electronic money and crypto assets immediately for the funds that the company's management needs or can immediately withdraw from the electronic transaction management system. The task of control lies in monitoring all exchange transactions in order to minimize the chains of transformation of electronic money and crypto assets.

Determination of exchange rate differences and charging fees for electronic money transactions are taking place at the time of withdrawal of crypto assets (conversion into fiat money) from crypto exchanges. In accounting for monetary assets, revaluation of the necessity of revaluation for the reporting period is foreseen, which is also actual for cryptocurrencies. However, e-money and cryptocurrencies, which are characterized by significant volatility, require a reduction in the time lags between revaluation stages. Since market rates on stock and cryptocurrency exchanges can change every second, it is necessary to periodically adjust the value of electronic money and cryptocurrencies in accounting. At the end of the detailed reporting periods, it is necessary to adjust the value of crypto assets to ensure that the accounting data is consistent with market quotes.

However, if crypto assets are positioned by an enterprise as investment or financial instruments, the periodicity of formation of accounting information and its control should be optimized to meet management expectations. For the purposes of controlling and managing option or futures contracts, accounting information for much shorter periods of time is required (a day, the financial cycle of functioning of the exchange, an operating hour, etc.). Thanks to the synchronization of the software with the information environment of crypto exchanges, it is possible to quickly download current market rates. For the purposes of

controlling electronic transactions, it is advisable to update information on the market price of electronic money and cryptocurrencies in the event of a significant change in the market situation. Based on the data on significant changes in market rates (for example, by more than 5 per cent), users of crypto exchanges may decide to immediately close a futures position. At the moment of termination of a futures agreement on electronic money and cryptocurrencies, the results of electronic transactions are reflected in the accounting records in a manner similar to classic futures transactions.

Thus, if electronic money and cryptocurrencies are held by an enterprise for cash circulation purposes, revaluation is performed in the event of a significant difference between the book value and the market value or at the end of the reporting period. Instead, the recognition of crypto assets as investment and financial instruments requires permanent operational revaluation. The features and procedure for conducting of the valuation of crypto assets are shown in Fig. 2.

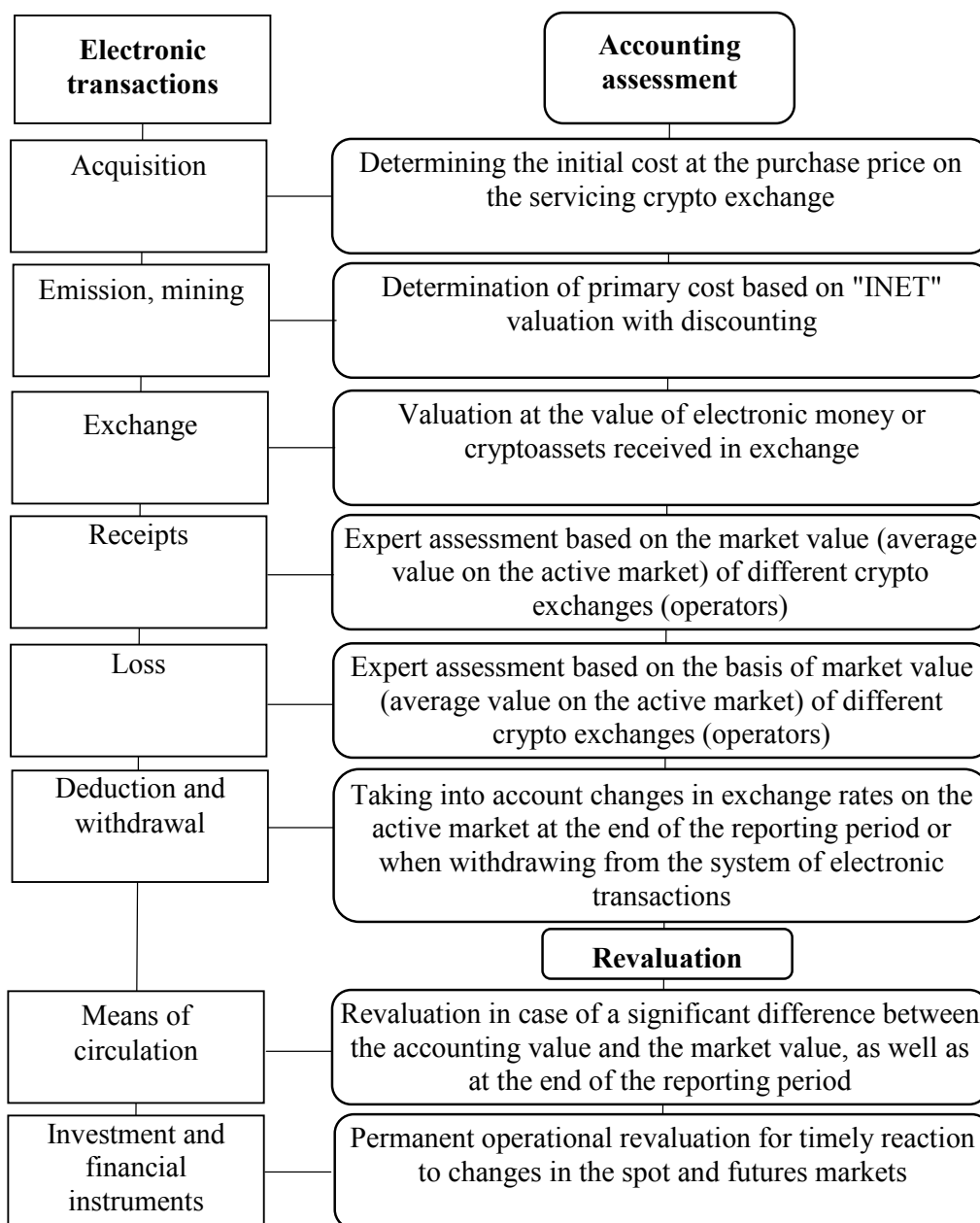


Figure - 2. Evaluation of crypto assets by type of electronic transaction  
 Source: compiled by the authors

Under conditions of independent emission of crypto assets, reliable valuation of newly created assets is problematic. The staff of a business entity may be involved in cryptocurrency mining, emission of crypto assets, issuing different types of tokens, etc. To evaluate such crypto assets, it is advisable to engage an expert committee, whose members can determine the value of the accounting items based on public information from crypto markets and professional judgment.

To determine the initial cost, the expert commission may conduct an inventory of the costs incurred for creating crypto assets and calculating their cost. Inventory control and calculation makes it possible to identify and separate, if possible, the cost elements in the formation of the cost of electronic and cryptographic funds. A significant challenge for the accounting and control system is the valuation of crypto assets that are issued for the first time and are not available on the market, not identified by electronic transaction operators. In this case, the members of the expert committee are faced with the task of making a reliable initial assessment of the newly created crypto assets. The calculated value will be used for the initial listing of electronic and cryptographic monetary objects on the market [7].

For the purpose of the initial valuation of crypto assets, it is advisable to use the INET Valuation Model [1]. The purpose of this model is “to try to estimate the value of a fictional token called INET, which gives users the opportunity to participate in the provision of broadband Internet access through a decentralized virtual private network” [4]. It takes into account not only the market position of a cryptoasset based on the balance of supply and demand, but is also based on its internal economic levers of functioning. The given model consists of four main blocks: calculation of the number of crypto assets in free circulation (“INET Supply Schedule Inputs”); economic evaluation (“INET Economy Inputs”), acceptance of the cryptoasset by the active market (“Adoption Curve Inputs”), determination of the value of the accounting object based on discounting (“Deriving Current Market Value from Future Utility”).

This model is quite suitable and easy to calculate for the initial valuation of newly created crypto assets, which contributes to its active use. The disadvantage of the “INET” valuation model is that it does not properly take into account all costs associated with the circulation of electronic and cryptographic funds. The second block of the economic valuation (“INET Economic Inputs”) of the model focuses only on the organization of high-quality, broadband permanent Internet access, which is necessary for the proper functioning of crypto assets. It is advisable to supplement the INET model with indicators that also take into account the costs of creating and maintaining electronic and cryptographic monetary units from an accounting perspective.

Such costs include: employee salaries and social security contributions for employees whose functional responsibilities are directly related to electronic money and cryptocurrencies; the cost of utilities and, especially, electricity, which is consumed in significant volumes when generating and maintaining crypto assets; depreciation of specialized software and hardware, etc. Accordingly, it is advisable to add the indicators “Salary and social insurance”, “Electricity and communal services”, “Amortization” to the second block of economic assessment (“INET Economic Inputs”). The values of the indicators are indicated in annual equivalent and take place in the calculations in the same way as the cost of Internet access. Identification in the accounting of all cost elements related to the generation and maintenance of crypto assets ensures the reliability of the calculation of their initial value. However, in order to prepare accounting information on the relevant costs, it is necessary to reliably identify them and separate them, which creates new requirements for accounting and control and requires further research.



**Conclusions and prospects for further researches.** The formation of the digital economy is based on the further development of electronic means of payment. The active use of electronic and cryptographic money is associated with significant organizational difficulties in the economic interpretation of electronic money transactions, which relies on accounting. In order to accurately account for electronic transactions using electronic money and crypto assets, it is important to have their reliable identification, inventory and accounting valuation.

Based on the information synchronization of crypto exchanges (money transaction operators) with specialized accounting automation software, a permanent automatic inventory of electronic and cryptographic funds is possible. When preparing for the inventory and valuation of electronic and cryptocurrency funds, it is advisable to take into account their intangible nature, significant volatility, speculative nature, confidentiality, decentralized management, etc. Inventory control of electronic money and cryptocurrencies in the context of taking into account their identifying characteristics should be carried out by type of transaction (Balance replenishment, Transfer between accounts, Acquisition, Receipt, Credit and Deposit, Exchange, Primary issue and Mining).

According to the analogous principles, it is advisable to carry out an accounting valuation of crypto assets with determining their initial and future value in the context of distinguishing different types of electronic transactions (Acquisition, Exchange, Receipt, Loss, Retention and Withdrawal, Issue and Mining). For provision of timeliness of accounting information, it is necessary to revalue accounting objects depending on the way they are used: as a means of cash circulation (periodic revaluation), as investment and financial instruments (permanent revaluation). The most problematic issue is determining the value of newly created crypto assets if they are not available on an active crypto market. For a reliable assessment of such accounting objects, it is recommended to use the “INET” model with its supplementation by indicators that take into account the costs of labor and social insurance, electricity and utilities, and depreciation of equipment related to the maintenance of the electronic transaction system.

The use of the author's proposals will facilitate reliable and timely accounting of electronic and cryptographic funds. However, in order to prepare accounting information on the relevant costs, it is necessary to fully identify and separate them, which creates new requirements for accounting and control and requires further research.

## Список літератури

1. Бруханський Р. Ф., Спільник І. В. Криптоактиви у системі бухгалтерського обліку та звітності. Проблеми економіки. 2019. № 2. С. 145–156. DOI: <https://doi.org/10.32983/2222-0712-2019-2-145-156>.
2. Оцінка криптоактивів. Cryptohuckers. URL: <https://www.cryptohuckers.club/2018/04/ocinka-kryptoaktyviv-chastyna-druga.html> (дата звернення: 12.04.2023).
3. Стовпова А. С. Мультикласова модель обліку криптовалют як основа достовірного (правдивого) розкриття інформації про них у фінансовій звітності суб'єктів господарювання. Інвестиції: практика та досвід. 2021. № 10. С. 83–88. DOI: <http://doi.org/10.32702/2306-6814.2021.10.83>.
4. Шевченко Л. В. Методика обліку криптовалют в умовах нестабільності діючого законодавства. Ефективна економіка. 2020. № 1. URL: <http://www.economy.nayka.com.ua/?op=1&z=7616>. DOI: 10.32702/2307-2105-2020.1.156.
5. Alici Mustafa, Yanik Serap. Accounting of Crypto Assets. Muhasebe Bilim Dünyası Dergisi. 2022. № 24. DOI: <http://doi.org/10.31460/mbdd.1066621>.
6. Bitcoin. Coindesk. Retrieved from: <https://www.coindesk.com/price/bitcoin>.
7. Druszcz Piotr, Procházka David. Cryptoassets—nature, valuation and disclosures in accounting. 2021. DOI: <http://doi.org/10.18559/978-83-8211-055-5/10>.

8. INET Valuation Model. Retrieved from: <https://docs.google.com/spreadsheets/u/0/d/1ng4vv3TUE0DoB12diyc8nRfZuAN13k3aRR30gmuKM2Y/htmlview>.
9. Lehner Ed, Ziegler John, Carter Louis. (2021). A Call for Second-Generation Cryptocurrency Valuation Metrics. 2021. DOI: <http://doi.org/10.4018/978-1-7998-5351-0.ch042>.
10. Pakhnenko O., Rubanov P., Girzheva O., Ivashko L., Britchenko I., Kozachenko L. Cryptocurrency: Value Formation Factors and Investment Risks. *Journal of Information Technology Management, Special Issue: Digitalization of Socio-Economic Processes*. Vol 14. September 2022. № 14. P. 179-200. DOI: <http://doi.org/10.22059/jitm.2022.88896>.
11. Shanaev Savva, Shuraeva Arina, Vasenin Mikhail, Kuznetsov Maksim. Towards Proof-of-Work Cryptocurrency Valuation: Mining Games, Network Effects and the Social Value of Blockchain. *SSRN Electronic Journal*. 2019. DOI: <http://doi.org/10.2139/ssrn.3352098>.
12. Song Garrison. Valuation of Cryptocurrency Without Intrinsic Value: A Promise of Future Payment System and Implications to De-dollarization. *Eastern Economic Journal*. № 49. DOI: <http://doi.org/10.1057/s41302-023-00237-2>.
13. Zadorozhnyi Z.-M., Muravskiy V., Shevchuk O. Management accounting of electronic transactions with the use of cryptocurrencies. *Financial And Credit Activity: Problems Of Theory And Practice*. 2018. № 3(26). P. 169-177. DOI: <http://dx.doi.org/10.18371/fcaptop.v3i26.144368>.
14. Zhang Xingjian. The Valuation and Investment Risk of Cryptocurrency: Evidence from Bitcoin and Ethereum. *BCP Business & Management*. 2023. № 44. P. 441-448. DOI: <http://doi.org/10.54691/bcpbm.v44i.4853>.
15. Zhang Xinyi.. Cryptocurrency Assets Valuation Based on LSTM: Evidence from Bitcoin, Ethereum, and Dogecoin. *BCP Business & Management*. 2022. № 35. P. 259-266. DOI: <http://doi.org/10.54691/bcpbm.v35i.3301>.

## References

1. Brukhanskyi, R.F., & Spilnyk, I.V. (2019). Kryptoaktyvy u systemi bukhhaltenskoho obliku ta zvitnosti [Crypto assets in the accounting and reporting system]. *Problemy ekonomiky – Problems of the economy*, 2, 145–156. DOI: <https://doi.org/10.32983/2222-0712-2019-2-145-156> [in Ukrainian].
2. Otsinka kryptoaktyviv [Valuation of cryptoassets]. *Cryptohuckers. cryptohuckers.club*. Retrieved from <https://www.cryptohuckers.club/2018/04/otsinka-kryptoaktyviv-chastyna-druga.html> [in Ukrainian].
3. Stovpova, A.S. (2021). Multyklasova model obliku kryptovaliut yak osnova dostovirnogo (pravdyvoho) rozkryttia informatsii pro nykh u finansovii zvitnosti subiektiv hospodariuvannia [Multiclass accounting model of cryptocurrencies as a basis for reliable (truthful) disclosure of information about them in the financial statements of economic entities]. *Investytsii: praktyka ta dosvid - Investments: practice and experience*, 10, 83–88. DOI: <http://doi.org/10.32702/2306-6814.2021.10.83> [in Ukrainian].
4. Shevchenko, L.V. (2020). Metodyka obliku kryptovaliut v umovakh nestabilnosti diiuchoho zakonodavstva [Methodology of accounting for cryptocurrencies in the conditions of instability of the current legislation]. *Efektivna ekonomika – Efficient economy*, 1. Retrieved from <http://www.economy.nayka.com.ua/?op=1&z=7616>. DOI: 10.32702/2307-2105-2020.1.156 [in Ukrainian].
5. Alici, M. & Yanik, S. (2022). Accounting of Crypto Assets. *Muhasebe Bilim Dünyası Dergisi*, 24. DOI: <http://doi.org/10.31460/mbdd.1066621> [in English].
6. Bitcoin. *Coindesk. coindesk.com*. Retrieved from <https://www.coindesk.com/price/bitcoin> [in English].
7. Druszcz, P., & Procházka, D. (2021). Cryptoassets-nature, valuation and disclosures in accounting. DOI: <http://doi.org/10.18559/978-83-8211-055-5/10> [in English].
8. INET Valuation Model. *docs.google.com*. Retrieved from <https://docs.google.com/spreadsheets/u/0/d/1ng4vv3TUE0DoB12diyc8nRfZuAN13k3aRR30gmuKM2Y/htmlview> [in English].
9. Lehner, Ed, Ziegler, J., & Carter, L. (2021). *A Call for Second-Generation Cryptocurrency Valuation Metrics*. DOI: <http://doi.org/10.4018/978-1-7998-5351-0.ch042> [in English].
10. Pakhnenko, O., Rubanov, P., Girzheva, O., Ivashko, L., Britchenko, I., & Kozachenko L. (2022). Cryptocurrency: Value Formation Factors and Investment Risks. *Journal of Information Technology Management, Special Issue: Digitalization of Socio-Economic Processes, Vol 14*, 179-200. DOI: <http://doi.org/10.22059/jitm.2022.88896> in English].
11. Shanaev, S., Shuraeva, A., Vasenin, M. & Kuznetsov, M. (2019). Towards Proof-of-Work Cryptocurrency Valuation: Mining Games, Network Effects and the Social Value of Blockchain. *SSRN Electronic Journal*. DOI: <http://doi.org/10.2139/ssrn.3352098> [in English].

12. Song, G. (2023). Valuation of Cryptocurrency Without Intrinsic Value: A Promise of Future Payment System and Implications to De-dollarization. *Eastern Economic Journal*, 49. DOI: <http://doi.org/10.1057/s41302-023-00237-2> [in English].
13. Zadorozhnyi, Z.-M., Muravskiy, V., & Shevchuk, O. (2018). Management accounting of electronic transactions with the use of cryptocurrencies. *Financial And Credit Activity: Problems Of Theory And Practice*, 3(26), 169-177. DOI: <http://dx.doi.org/10.18371/fcaptp.v3i26.144368> [in English].
14. Zhang, X. (2023). The Valuation and Investment Risk of Cryptocurrency: Evidence from Bitcoin and Ethereum. *BSP Business & Management*, 44, 441-448. DOI: <http://doi.org/10.54691/bcpbm.v44i.4853> [in English].
15. Zhang, X. (2022). Cryptocurrency Assets Valuation Based on LSTM: Evidence from Bitcoin, Ethereum, and Dogecoin. *BSP Business & Management*, 35, 259-266. DOI: <http://doi.org/10.54691/bcpbm.v35i.3301> [in English].

**В.В. Муравський**, проф., д-р екон. наук

**П.Н. Денчук**, доц., канд. екон. наук

**О.І. Ревага**, асп.

*Західноукраїнський національний університет, Тернопіль, Україна*

### **Інвентаризаційний контроль та облікова оцінка електронних грошей і криптоактивів в електронних транзакціях**

Грошовою основою цифрової економіки є електронні гроші та криптографічні об'єкти, що наділені специфічними характеристиками, врахування яких значно ускладнює облік і контроль. З метою забезпечення ідентифікації, інвентаризації та оцінки криптоактивів необхідною є оптимізація методики та організації обліку електронних грошових транзакцій в умовах цифрової економіки. Мета статті полягає в удосконаленні інвентаризаційного контролю та методики облікової оцінки з позиції теперішньої та майбутньої вартості електронних та криптографічних грошових засобів у контексті здійснення електронних грошових транзакцій.

У статті обґрунтовано можливість перманентної автоматичної інвентаризації електронних та криптографічних грошових засобів на основі інформаційної синхронізації криптобірж (операторів електронних транзакцій) з спеціалізованим програмним забезпеченням для автоматизації обліку. Удосконалено порядок проведення інвентаризаційного контролю електронних грошей та криптовалют у розрізі видів електронних транзакцій. Визначено особливості облікової оцінки криптоактивів, що характеризуються нематеріальною природою, значною волатильністю, спекулятивністю, конфіденційністю, децентралізацією тощо.

Оптимізовано методику облікової оцінки криптоактивів з визначенням первісної та майбутньої їх вартості у контексті виокремлення видів електронних транзакцій, а також необхідності переоцінки облікових об'єктів, що використовуються як засіб грошового обігу або як інвестиційні та фінансові інструменти. Уточнено методику оцінки новостворених криптоактивів у частині врахування витрат на оплату праці і соціальне страхування, електроенергію і комунальні послуги, амортизації обладнання, що пов'язані з обслуговуванням системи електронних транзакцій. Використання авторських пропозицій сприятиме достовірному та своєчасному обліку електронних та криптографічних грошових засобів.

**облік, електронні гроші, криптовалюти, криптоактиви, інвентаризація, оцінка, електронні транзакції**

*Одержано (Received) 31.04.2023*

*Прорецензовано (Reviewed) 09.05.2023*

*Прийнято до друку (Approved) 29.05.2023*