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State Agrarian and
Economic University*

**SCIENTIFIC AND METHODOLOGICAL PRINCIPLES OF ACCOUNTING,
FINANCIAL, INFORMATION AND LANGUAGE AND COMMUNICATION
SUPPORT FOR SUSTAINABLE DEVELOPMENT OF AGRIBUSINESS
ENTITIES AND RURAL TERRITORIES**

COLLECTIVE MONOGRAPH

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Scientific and methodological principles of accounting, financial, informational and language and communication support for sustainable development of agribusiness entities and rural territories: a collective monograph. / edited by H. Pavlova and L. Vasilieva. Dnipro: Printing house «Standard», 2022. - 420 p.

The monograph examines the scientific problems of building accounting and financial support for sustainable development of agribusiness entities and rural areas. Modern information systems and technologies in accounting, auditing and taxation are considered. The theoretical, organizational and methodological principles of language and professional training of a specialist in agriculture, as well as modern technologies of education in higher educational institutions are revealed.

The collective monograph was published within the framework of the State Budget research topics “Organizational and methodological principles of accounting, reporting and control in the system of economic stability of enterprises” (state registration number 0116U003135) and “Finance, banking system and insurance in integrated rural development” (state registration number 0119U001573), “Information technologies and mathematical methods for the development of the agricultural sector of the economy” (state registration number 0120U105338), “Language and professional training: linguistic, social, cognitive, communicative, cultural aspects” (state registration number 0116U005132).

The publication is aimed at professionals engaged in practical activities in the field of regional policy, academics, government officials and the general public.

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28-32.

16. Dobrovolska, O.V., Kravchenko, M. and Danilenko, O. (2021), "Financial reporting as an element of enterprise management system". *Ekonomika ta suspil'stvo*, vol. 32. <https://doi.org/10.32782/2524-0072/2021-32-34>

17. Katan, L. I. and Dobrovolska, O.V. (2016), "Crisis management of credit institutions". *Naukovyj visnyk Khersons'koho derzhavnoho universytetu. Seriya «Ekonomichni nauky»*, Kherson, vol. 17(1), pp. 115-120.

18. Kihel', V. A. (2003), "On determining the optimal loan portfolio of the bank in terms of risk of non-repayment by borrowers". *Visnyk NBU*, vol.1, pp. 20-24.

19. Nidzel's'ka, I.A. (2009), "Credit risks and their consequences for the banking system in the deepening financial crisis". *Finansy Ukrainy*. vol. 8, pp. 102-108.

20. Official site of the National Bank of Ukraine URL : www.bank.gov.ua.

21. Regulation of the NBU "On the procedure for forming and using the reserve for compensation of possible losses on credit operations of banks", approved by the resolution of the Board of the NBU №279 from 06.07.2000. URL: www.zakon.rada.gov.ua.

22. Yasinska, D.V. and Dobrovolska, O.V. (2021), "The Golden Rule of Morality and the Golden Rule of Debt Accumulation: Relationships and Relationships". *Ahrarna nauka XXI stolittia: realii ta perspektyvy: tezy dopovidej naukovo-praktychnoi konferentsii 23.03-25.03.2021 r. : Dnipro : Drukarnia «Standart»*, pp. 13-15.

4.4. PROSPECTS FOR THE USE OF BLOCKCHAIN TECHNOLOGY AND CRYPTOCURRENCY VIRTUAL ASSETS IN THE INSURANCE MARKET

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Summary. Prospects for the use of blockchain technology and the use of virtual assets, as well as the regulation of cryptocurrency in the insurance market are considered. The cyber risk insurance market is analyzed. The main trends and the most important directions of development of the information sector of the digital industry are identified. A study of the legislative regulation of underwriting and insurance protection of risks on the cryptocurrency exchange was conducted. The scope of use of blockchain assets as a financial instrument of the stock exchange has been established.

Keywords : blockchain, bitcoin, virtual assets, transaction, insurance, cryptocurrency

Over the past 5 years, blockchain technology has been rapidly spreading in the insurance market - it is a shared, immutable ledger designed to record transactions, account for assets and build trust relationships. Recently, financial technologies have been developing rapidly, within which Blockchain began to be used. Basic research by leading scientists is underway to determine essence of cryptocurrency,

opportunities to use blockchain technology as an innovative business process technology in the economy. The research of this problem is devoted to the works of such scientists as Melnichenko O.V., Korneev V.V., G.M.Tarasyuk, but the question remains debatable and unresolved, in particular, in terms of opportunities and risks of using cryptocurrencies and blockchain technology in the field of insurance. Recently, many domestic and foreign companies have devoted their works to the study of blockchain technology. scientists and practitioners such as: S. Bila, D. Bryzgalov, N. Bricheeva, R. Vakulin, M. Datsko, A. Zhmurkevich, I. Kiselyov, O. Makovoz, T. Perederiy, V. Tkachuk and others, who mostly considered opportunities and prospects for the application of blockchain technology in various fields of human activities.

This technology has been used not only in digital financial systems, but also in other sectors of the economy for several years. Moreover, programmers, financial analysts, and economists agree that the prevalence and demand of Blockchain will grow in geometric progress. The most optimistic experts even say that this technology is one of the most important inventions of mankind after the creation of the World Wide Web. Many domestic and foreign scientists and practitioners devoted their works to blockchain technology research, who mostly considered the possibilities and prospects of using blockchain technology in various spheres of human activity. In addition, blockchain is a software product, which allows you to store any data using the Internet in a secure and transparent way, without having a central government body [4],and avoids intermediaries in financial, economic and economic activities. The basis of blockchain technology is in distributed storage of information, which allows storing open and safely important information simultaneously on many servers.

Schematically, blockchain technology is shown in Fig. 1

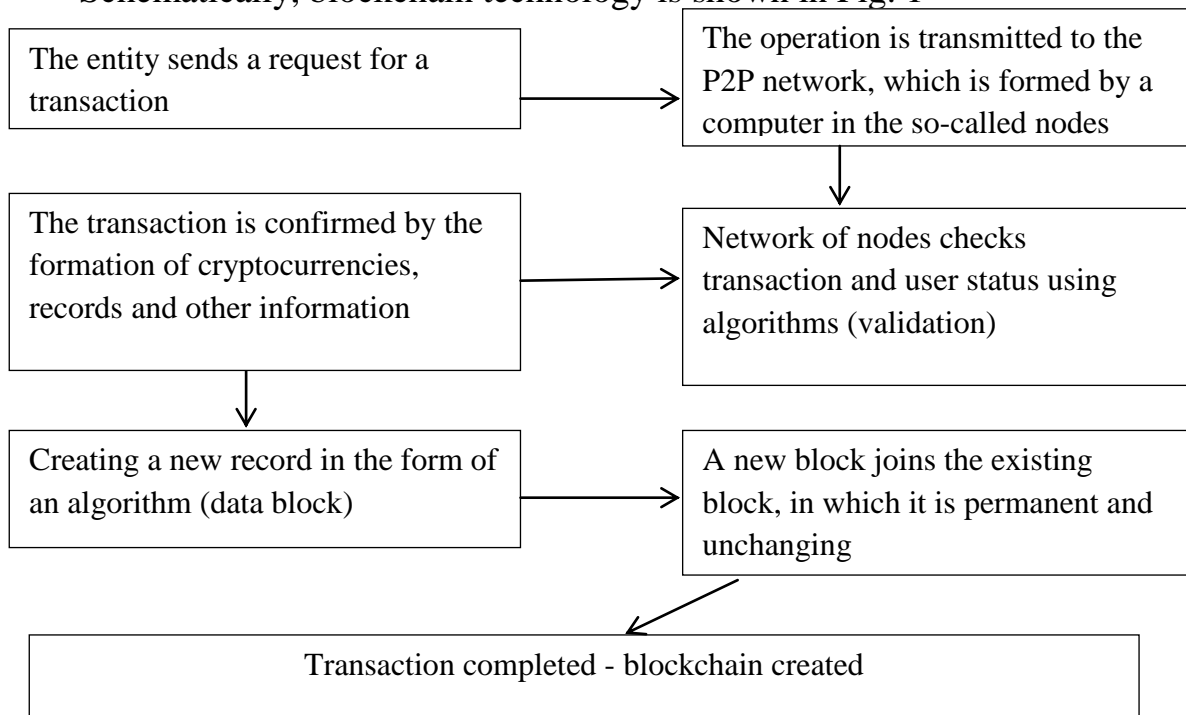


Fig. 1. Scheme of blockchain technology [4]

Creating a new transaction confirmation data block may include cryptocurrencies, contracts, records or other information. Subject sends a request for transaction Transaction completed New block joins the existing chain, the blocks in which it is a constant and unchanging. Validation – a network of nodes checks the transaction and user status using well-known algorithms. The operation is transmitted to the P2P network, which is formed by computers called nodes. Blockchain technology is one example of such innovations, the use of which allows reducing the time spent on individual business processes of the insurer reduce the degree of risks of insurance and financial transactions, as well as ensure a high degree of trust between partners in conditions of maximum transparency. Now this technology is a database for faster exchange of information with a high degree of protection, that is why financial institutions are interested in using it. The table presents the views of researchers on the essence of the concept of «blockchain».The use of blockchain technology in the insurance business allows not only to optimize operations, but also to effectively build relationships with partners (other insurers, reinsurers and their associations, banking institutions, travel agencies, companies that lease housing, cars and equipment, medical institutions, vehicle maintenance stations, etc.) and state authorities. Blockchain technologies have the following properties [8]: the use of cryptocurrencies (there are more than 2000 types, the most common is bitcoin);availability of computing infrastructure; use of the transaction platform; use of decentralized database; availability of distributed registry; application development platform; open source software; trading platform of financial services; P2P networks; trusted server infrastructure. In addition, using blockchain technology as a public database of all transactions ever made on the Bitcoin system allows each blockchain user to know how much Bitcoin belonged to any particular recipient at a given time. Prospects for the use of blockchain technology in the field of insurance are possible in the following areas:

- certification of agreements without intermediaries and the implementation of electronic accounting;
- making payments and remittances faster and with a lower fee (especially in incoming and outgoing reinsurance transactions);
- increase the level of cybersecurity of the insurer by checking the data received (transmitted), which is a guarantee of reliability (authenticity) of their sources of origin and prevent the interception of information at an intermediate stage;
- participation in trading on stock exchanges, in making investments in various types of securities, defined as assets that can be represented by insurance reserves;
- implementation of the mechanism of individual microinsurance, in which the blockchain acts as a third party (guarantor);
- obtaining certificates and other documents, confirming the fact of the insured event, from the competent authorities (police, medical institutions, etc.) and companies that provide various assistance services (medical, technical, legal);
- decentralized use of cloud storage for data storage. The classic insurance business model, which is influenced by digital innovations, is gradually being transformed into an innovative business model based on innovative products and innovative coverage,

which can potentially be transformed into an innovative breakthrough implemented through two methods: digital and insurance innovation. . In addition, the evolution of insurance products is quite confident: from traditional to innovative, digital and online. Such restructuring is observed in different directions: by types of risks, by types of products, by sales and distribution channels, by target audience, etc. Thus, the usual property insurance against damage caused by fire, theft and intrusion, turns into insurance of "smart homes" using sensors and warning systems. The insurance innovative business model requires the insurance company to innovate insurance products with the principle of payment per use (Pay per Use), which will provide customers with a paperless service, and will offer new distribution channels. Standard distribution channels (agents, call centers, specialty products, sales and service) will be gradually supplanted by innovative (direct Internet channel, mobile technologies) switches to "smart home" insurance using sensors and an alarm system [16, p.178].

Distributed Registry (DLT) technology means that all network members have access to a distributed registry and a fixed transaction record. The common registry implements a one-time transaction record, in addition to the duplication of effort typical of traditional business networks. Once the transaction has been recorded in the general register, none of the participants can change or falsify it. If an error is detected in the transaction record, a new corrected transaction must be added, and both transactions will be visible. A set of rules (smart contract) is used to speed up transactions, which is stored in the blockchain network and is executed automatically. A smart contract can determine the terms of the transfer of corporate bonds, add criteria for the payment of travel insurance and much more. Anyone can join the public blockchain network (Bitcoin). Disadvantages of such a network include high computing power requirements, low transaction confidentiality, and weak security. These criteria are important when using blockchain in corporate environments. The private blockchain network, as well as the public blockchain network, is a decentralized peer-to-peer network, with the significant difference that the network is managed by one organization. This organization determines who can join the network, execute the consensus algorithm, and administer the shared registry. Depending on the scenario of use, this approach can significantly increase the reliability and reliability of information transmitted between participants. A private blockchain network can be behind a corporate firewall or even in a local environment. Responsibility for blockchain administration may lie with several organizations. These pre-selected organizations establish access rights to execute transactions or access data. A blockchain consortium is an ideal solution for companies where all participants have permits and are collectively responsible for the blockchain.

The Verkhovna Rada passed the bill «On Virtual Assets» in the first reading. Prior to the second reading, the document changed, but financial regulators criticized the updated bill. Subsequently, the text was updated again to take into account the comments, and the Committee on Digital Transformation recommended that the bill be adopted. Due to the unregulated financial market, all financial transactions with assets are in the shadows. Because of this, international exchanges cannot enter

Ukraine. No transaction is taxed. Thanks to the adopted law, such issues will be resolved. Conditions will be created that will allow the budget to receive taxes and entrepreneurs to feel protected. Also, the adoption of the bill will allow companies operating with such virtual assets to register in Ukraine. In total, three countries have legalized cryptocurrencies in the world, Germany, Luxembourg and Singapore, the minister added. The Ministry of Finance added that Ukrainian and foreign cryptocurrencies will now be able to officially operate in Ukraine. Banks will be able to open accounts for crypto companies, and income can be declared in virtual assets. In particular, companies providing crypto services will be required to disclose the ownership structure and conduct financial monitoring.

But the bill passed by the Council will not be able to launch the market of virtual assets in Ukraine. This will be possible after changes to the tax code, said the Ministry of Finance. "The adopted bill is basic. We are currently working on a bill to amend the Tax Code. It regulates the taxation of participants in the virtual assets market. After its adoption, we will be able to launch the virtual assets market." According to the document, virtual assets (VA) are recognized as intangible assets. They are divided into secured and unsecured. They are not a means of payment in Ukraine and cannot be exchanged for property or services. Market participants received the right to judicial protection of rights to VA, to open bank accounts for settlements on transactions with virtual assets, and independently determine and establish the value of virtual assets in the course of operations. They are also required to comply with anti-money laundering and anti-terrorist financing laws. The document introduces the definition of financial virtual assets, the issuer of which must be a resident of Ukraine. They can be backed by currency values - in which case the circulation is regulated by the National Bank, as well as securities or derivatives - are regulated by the National Securities and Stock Market Commission.

Uncontrolled proliferation of virtual assets, especially stablecoins, carries the risk of national currency substitution and parallel money circulation, which will negatively affect the National Bank's ability to pursue monetary policy effectively, ensure hryvnia stability and threaten the country's monetary sovereignty. The basic principles of monetary policy for 2022 and the medium term determine that in order to minimize risks, the National Bank will take a principled position on preventing the narrowing of the hryvnia as the only legal tender in Ukraine or creating opportunities to circumvent the current state regulation. For the first time, publications "NBU Policy in the Field of Virtual Assets Circulation" among other risks are, in particular, the risk of using virtual assets to circumvent current state regulation and supervision, for example, bypassing currency regulation and uncontrolled flow of capital abroad, which may increase threats to the stability of the foreign exchange market. The National Bank also draws attention to the risk of evasion from financial monitoring requirements in preventing and counteracting the legalization of criminal income, as well as the risk of the flow of part of bank deposits into virtual assets and the displacement of traditional banking.. Therefore, the National Bank of Ukraine within its competence intends to pay attention to monitoring and minimizing the risks of the spread of virtual assets for monetary policy and financial stability, as well as to

establish effective control over their circulation, the document says. At the same time, it emphasizes that currently, due to the limited prevalence of cryptocurrencies and their high price volatility, they do not have a significant impact on monetary policy and financial stability. The National Bank also recognizes that technological innovations related to virtual assets can open up many promising opportunities: improving access to financial services, increasing competition in the payment services market, and promoting investment. Therefore, the National Bank supports the need to create civilized conditions for the development of the virtual assets market in Ukraine [10, p.105].

It has recently been impossible to insure against losses and bankruptcies in the digital industry, but now it has become a reality. There are more and more companies that are ready to offer damages to the crypto market. In December 2017, The New York Times published a major article about bitcoin millionaires Winklevoss brothers. It revealed details of how two major investors are protecting their digital assets. Cameron and Tyler use only cold wallets, print the keys, then divide them into several parts, put them in envelopes and send depository branches around the country. This is just one way to preserve digital assets, which, however, does not guarantee 100% protection. Investors can be given great confidence that investing in cryptocurrency will not lead to bankruptcy. This is a new area in the digital industry, which is gaining momentum quite quickly. Previously, cryptocurrency insurance was of interest only to large owners of digital coins, those who had financial surpluses, they could be used to protect against potential risks. Today, the number of crypto market players has grown significantly, the volume of digital assets has increased many times. Therefore, not only cryptocurrency millionaires began to think about insurance. What can be insured in the digital industry The most popular and understandable, from the point of view of insurers, area - cryptocurrency insurance. Due to frequent hacks and large-scale hacking attacks, the founders of such sites are forced to look for ways to compensate for losses in the event of an emergency. After hackers withdrew more than \$ 40 million from the large Bithumb site, several South Korean exchanges united in a blockchain association. At the end of 2018, Upbit, Bithumb, Korbit and Gopax agreed to make account insurance a necessary requirement for the operation of cryptocurrencies within the country [4].

The Coinbase platform and the Gemini exchange have joined the US Federal Deposit Insurance Corporation's (FDIC) insurance system, which provides cash compensation of up to \$ 250,000 to each client in the event of a cryptocurrency platform shutdown. However, this program protects only the funds of US residents and does not apply to owners of "hot" wallets. Therefore, exchanges enter into contracts in parallel with several insurance companies to cover all risks. Last May, the actions of representatives of BitGo, which provides encryption services, were actively discussed. Specialists traveled to several countries and met with 75 insurers in search of the most profitable and reliable offer. The company bought the insurance in 2015, but a year later abandoned it due to unreasonably high prices. After numerous meetings with insurance agents, BitGo representatives said that most insurers are well versed in the digital industry, adequately assess the risks and ask

very specific questions. In addition to insurance of exchanges and cryptocurrency companies, another area would be in great demand - insurance against fraudulent actions of ICO organizers, but insurers have not yet been able to figure out how to avoid major risks in this situation. However, there are a few firms that are willing to insure ICO investments, but in a slightly different format. For example, there are projects that offer to hedge the risks of changes in the value of tokens after the ICO, ie, ready to insure investors against the fall of the new asset. Classic insurance in the digital industry is also gaining proliferation. In essence, these are the usual services of insurance companies, but using blockchain and smart contracts. Thanks to new technologies, companies are trying to increase the speed of insurance payments, make the process of regulating insurance cases more transparent and try to avoid paperwork altogether. However, the work of such companies has many nuances, mostly related to the law. Insurance companies have very strict regulations, as they are regulated by the Central Bank. Therefore, if insurers use smart contracts and refuse official documents, they will have to make payments from profits instead of the insurance fund, which is extremely unprofitable. But there is a way out of this situation: companies that do not use insurance licenses now offer their clients insurance instruments, but do not call them insurance [13].

Consider which companies offer insurance services. In June this year, one of the largest insurance brokers Aon formed a group of European insurers (company names were not disclosed) to protect against the risks of users of hot and cold wallets Metaco, a company specializing in digital asset storage. According to Aon, they cover almost everything. From natural disasters and breakdowns of "cold" storage to hacking online wallets. In 2018, Aon, according to the company's management, occupied more than 50% of the crypto insurance market. The names of such insurers in the cryptocurrency industry as Marsh & McLennan, Chubb, XL and the British insurance company Lloyd's of London are known. There are no large insurance companies specializing in digital assets in Russia yet, mainly due to the fact that the status of cryptocurrencies has not yet been determined. However, the issue of insurance of the domestic digital industry has been raised repeatedly. A popular cryptocurrency insurer in Ukraine is Cryptoins.io. However, she works in the country under the license of a foreign insurer. The user can insure in the company any cryptocurrencies stored on certain exchanges. If there are problems in the exchange and the investor cannot withdraw the cryptocurrency from the platform within 30 days, the company reimburses the losses. The B.Sure project works in much the same way: a trader acquires a digital coin on the exchange, then he can send a token to the B.Sure smart contract at any time and automatically insure his funds. The amount of the insured coin must be multiplied by 40 from the current price on that cryptocurrency platform, indicated by the investor. If the exchange closes or stops working, the funds will be automatically reimbursed in the amount that was in the account. The development of cryptocurrency insurance will largely depend on the actions of regulators and the status of digital coins in Russia and in countries where this issue has not yet been resolved. But sooner or later insurance must become a certain standard of quality, as has happened in the traditional financial market [5,

p.167].

One of the key problems for cryptocurrency owners and their heirs is the inability to access digital assets for technical (loss of code) or physiological reasons (death of the owner). The New York Times estimates that more than \$ 140 billion has been blocked in such cryptocurrencies by the beginning of 2021. Most often, not only his relatives but also his clients suffer from the sudden death of an investor operating in the cryptocurrency market. The most famous case is the death in 2018 of the founder of Canada's largest cryptocurrency exchange Quadriga CX Gerald Cotton, as a result of which 115 thousand customers lost access to their funds. "Renaissance Life" Insurance Company has signed a cooperation agreement with the founder of the Independent Decentralized Finance SmartBank & Ecosystem (InDeFi SmartBank) businessman Alexander Lebedev. The InDeFi SmartBank project envisages the development, implementation and provision of a customer death confirmation service and the use of such information to implement the mechanism of inheritance of digital rights and assets. Based on the intentions of the parties, InDeFi SmartBank will undertake the development of smart contracts and launch the inheritance procedure. This will allow the customer in case of death to transfer the disposal of their digital assets to the beneficiary specified by him. "Renaissance Life" Insurance Company, in turn, will act as an "oracle" to confirm the death of the client. The unique cooperation of the insurance company, which has a high reputation and trust among customers, with the DeFi project should solve one of the main problems of the modern crypto industry. Expected that the number of users of this service will be at least 500 thousand people in the coming year. The Opium Protocol's DeFi project has integrated rental insurance for real estate purchased in parts on the RealT platform, the project said. RealT is a progressive technology platform that offers investors the opportunity to buy real estate in parts on a blockchain basis. For about \$ 50 you can buy one token (or as much as you want to invest) property. Investors are then paid a percentage of the tenant's rent, depending on their investment in the USDC through Ethereum or the xDai network. Ethereum-based Opium Protocol is a decentralized protocol hosted on the Polygon network. One of the main options for using Opium is protection (decentralized insurance).

Currently, all real estate, offered by RealT is insured by standard insurance to protect it from property-related disasters such as fire and water damage. What is not insured is occupancy (monthly rent). For example, in the event of a fire, repairs and renovations can take three months. Repair costs are covered by property insurance; but if the tenant has to move, he does not pay the rent during that time. This means that the rent will not be allocated to this property during these 3 months. Insurance offered through the Opium protocol will continue to distribute rent payments when the tenant does not pay. Opium protection provides RealT cash flows. To take advantage of the offer, the user must block the insurance premium in the smart contract, which is calculated based on the value of the share in the property. In case of interruption of lease payments, the protocol will continue to pay rent throughout the insurance period. Compensation for losses of users is provided by sellers (stakeholders), who contribute funds to the appropriate pools. If the lease payments

are interrupted, they are unable to obtain the assets and may lose all collateral. For accepting risks after the end of the insurance period, they receive a bonus and tokens that remain in the pool. The more stakes in the pool, the longer the break in the rent can be covered, and the lower the profitability of each participant.

The global cyber insurance market will reach \$ 20.6 billion through the pandemic by 2025. According to GlobalData, the cyber market has already reached \$ 7 billion in gross premiums as the COVID 19 pandemic forced companies to digitize processes and implement remote work methods.

In particular, the cyber risk insurance market recorded growth of 33.5% in 2020 and is expected to approach 27.3% in 2021. The cyber insurance market has been expanding rapidly in recent years, with customers enjoying high limits of insurance coverage, fixed rates and great opportunities as insurers sought to capture business in a highly competitive market. Despite lower coverage limits and increased premiums, GlobalData expects that the cyber insurance market will continue to grow until 2025 compared to the previous year.

The need for reliable cybersecurity and insurance is becoming apparent to businesses of all types and sizes as the time and severity of cyber attacks continues to grow. COVID-19 has also led to irreversible changes in the way businesses and consumers work: remote work methods will be retained, and consumer digital channels will be used more than before the pandemic. This steady shift in behavior will increase the demand for both commercial and private cyber insurance in the coming years. On the other hand, the loss of the cyber insurance industry last year jumped by 22% points to a record level of 67%. Analysts attribute this to an increase in the severity of claims under insurance programs, including increased costs of responding to incidents and claims. The studied segments showed the highest loss rates since the start of collection in 2015, at the same time, individual cyber-policies recorded an increase of 25.7 percentage points (from 47.1% to 72.8%), and package cyber-programs by 16.4 percent (from 42.3% to 58.6%)). The increase in losses in 2020 is probably primarily due to the increase in the severity of claims, as the average payment increased by more than 50% from \$ 48,709 in 2019 to \$ 74,354 in 2020. However, the frequency of claims remained stable during 2020, averaging 5.62 claims per 1,000 policies compared to 5.61 claims in 2019 [2,3].

According to a study by the World Economic Forum The Global Risks Report 2021, cyber risks in recent years are firmly in the top five most obvious threats to business after infectious diseases, economic crisis and extreme weather events. Cyber risk protection programs, which are now offered not only by insurers but also by other tech companies, help protect businesses in the event of unauthorized debiting of money from the account and downtime as a result of a cyber attack. Insurance companies compensate for losses incurred within the insured limits. At the same time, the cost of an insurance policy that will help protect against various cyber risks is incomparably less than the potential losses of the company from cyber attacks. Cyber risks are becoming more real not only due to the organic growth of the use of digital solutions, but also because of the effects of the coronavirus pandemic. As a result of the pandemic, many companies have switched to remote operation and

remote channels of interaction with customers. Against the background of the related growth of cybercrime is increasing demand for cyber risk insurance. According to insurers, this trend will continue in the coming years, and in the future protection against these risks will become common practice for Ukrainian business [12, p.154].

According to the latest Global Insurance Market Index, published by reinsurance broker Marsh, world prices for commercial insurance rose by 15% in the third quarter of 2021. Analysts note the 16th consecutive quarter of growth, but the pace remains moderate in many areas of business and most geographic regions, suggesting that prices may have peaked in the fourth quarter of 2020 - 22%. Exceptions to this trend are the United States, where tariff growth has shifted from 12% to 14% between Q2 and Q3, and cyber insurance, where prices have risen much more than in other areas due to the growing threat of extortionate programs. . . In the US, prices rose by 96% compared to 56% in the second quarter, and in the UK by 73% compared to 35% in the second quarter, due to the frequency and seriousness of applications for extortion programs. «Although the risk and insurance situation remains difficult around the world, we expect tariffs in most areas to continue to decline», said Lucy Clark, president of Marsh Specialty and Marsh Global Placement. "However, the pressure on the cost of cyber insurance is likely to continue. Solution development in this segment remains a top priority. Rising prices in most regions slowed in the third quarter due to slower growth in property insurance and the responsibility of directors and officials (D&O).

The United Kingdom, where aggregate price growth was 27% (compared to 28% in the second quarter of 2021), and the Pacific region with a growth of 17% (compared to 23% in the second quarter of 2021) continued to determine the global composite rate. Growth rates in Asia were 6% (stable compared to the previous quarter), 2% in Latin America (down 4%) and 10% in continental Europe (down 13%). The only exception was the United States, where rates rose by 14% due to a significant increase in cyber insurance rates and a moderate increase in property and accidents. Cyber insurance is projected to grow because it has been largely lucrative for insurers and is considered by reinsurers to be insurable, despite the fact that ransomware attacks are accelerating, said participants in the 2021 Joint Industry Forum discussion. New York. The forum also called on governments to play a more important role in the cyber insurance sector, especially through a wider exchange of information. By 2026, insurers will receive \$ 28 billion in signed gross cyber insurance premiums. Insurers will continue to offer cyber insurance because it was generally profitable. Reinsurers are committed to the cyber sector and view risk as insurance. Aon sees that several new reinsurers are considering entering the market on a limited basis. According to her, reinsurers have also made some adjustments to the capacity, as they clarify their understanding of the sector. While cyber insurance has been lucrative for the insurance industry, rogue programs are very lucrative for attackers. We are seeing a significant increase in attacks using extortionist programs, because they are profitable, they are a good business for cybercriminals. Cybercriminals also use more automated methods, which increases the number of potential attacks and, consequently, damage. The government has more information

than any company and conducts intelligence operations that no company can match or reproduce. The government could play a role in these efforts by helping to create a central source of aggregate data. Actuaries need more information to make more informed decisions about cyber risks and underwriting [7,8].

Digital asset inflows fell 52 percent to \$ 88 million last week as crypto markets declined. According to a CoinShares report, cryptocurrency inflows for the week ended Dec. 10 were up from \$ 184 million the previous week. Bitcoin, the largest cryptocurrency, accounted for the bulk of the week's \$ 52 million inflow. Last week, Bitcoin funds had an inflow of \$ 145 million. Bitcoin has fallen 26% over the past 30 days, suggesting that investors continue to view price weaknesses as an opportunity to buy, but at a slower pace. For the first time in six weeks, Ethereum-focused funds, the second-largest cryptocurrency by market capitalization, witnessed an outflow. Ethereum's outflow last week was \$ 17 million. The CoinShares report notes that this week's inflow consisted of very mixed asset flows. Solana (SOL), a blockchain-based smart contracts platform, saw an inflow of \$ 17 million. SOL fell 35% from a month after reaching a record high in November. Tron (TRX) saw an inflow of \$ 15 million. According to the report, crypto funds focused on a multi-purpose blockchain platform now have a total asset management of \$ 92 million, which is higher than Cardano's \$ 68 million [11].

Wells Fargo and HSBC Bank said Monday they would use the blockchain-based product to address matching currency transactions. The two banking giants have agreed to use the general ledger to process transactions in US dollars, Canadian dollars, British pounds and euros with plans to expand the process to other currencies in the future. The blockchain-based settlement system uses HSBC's patented technology, built on CORE Baton Systems distributed registry technology, a HSBC spokesman said. The announcement comes as other major Wall Street banks, such as Goldman Sachs, reportedly seek to integrate blockchain technology into their regular processes. JPMorgan is also looking for software engineers to focus on «Accompanying Blockchain Tokening» and is expanding its Onyx division, which was set up to oversee the development of JPM, the bank's wholesale payment token [16, p.81].

Major players in technology and crypto-ecosystems are participating in a new blockchain-based standardization team. Six global corporations have teamed up to begin standardizing the IEEE Blockchain Identity of Things. The Institute of Electrical and Electronics Engineers (IEEE) is an international non-profit association of technical professionals, a world leader in the development of standards for radio electronics, electrical engineering and hardware for computer systems and networks. According to Dr. Xinxing Fang, Chair of the IEEE Working Group on Identification, researchers from Lockheed Martin, Ericsson, Lenovo, Huawei, Bosch, IoTeX and the Chinese Academy of Information and Communication Technologies are developing global standards for decentralized blockchain identification in a two-year effort back. After two years of research, six major global companies have presented proof of the concept of decentralized identification (DID) based on the blockchain for IoT devices, which Dr. Fan launched in 2019 with the World Wide Web Consortium

(W3C). IEEE is a non-profit organization that has developed standards for common technological needs related to wireless devices, networks and services. According to a press release, blockchain compatibility is critical to the success of the Internet of Things (IoT), people and businesses. It can promote global trade, economic development and the development of local communities around the world by removing technological barriers and enabling various organizations to interact with global standards [17, p.33].

Munich Re continues to see «favorable» prospects in the reinsurance market, with cyber risks, data analytics and artificial intelligence identified as the most important growth areas for the sector. Discussing the trend towards digitalization of the industry, reinsurer Munich Re said that future insurance would "radically change" traditional insurance. This will lead to the emergence of new areas of risk that require insurance solutions. Munich Re has already laid the foundations for profitable growth through its numerous digital and innovative projects. Identifying future trends and partnering with the risks of new technologies is at the heart of Munich Re's strategy, but cyber risk remains a major challenge and opportunity for the sector. The economic importance of cyber risks and, consequently, the demand for cyber insurance, will grow significantly in the coming years, especially due to the sharp rise in cyber so after the transition to telecommuting due to pandemic constraints. Given the growing number of losses, cyber insurance prices have risen sharply, and insurers have limited their capabilities, leading to a huge demand for insurance and service solutions. The growing number of ransomware attacks is seriously affecting the economy. The insurance industry is helping companies become more resilient to cyberattacks and reduce losses in the event of an incident.

However, some systemic risks can only be managed by the state in cooperation with the insurance industry. These risks range from terrorist or politically motivated attacks to cyber warfare and are largely covered by pools. Moreover, it is in the general interest to clarify the amount of insurance coverage through appropriate wording. For its part, Munich Re keeps growing losses from extortionist programs at a manageable level, thanks to the stabilizing effect of rising prices in a competitive market environment. Thus, the reinsurer adheres to its plan of profitable growth, based on the current market share of about 10%. Considering the wider possibilities of data analysis and artificial intelligence, Munich Re still sees the potential to optimize sales processes, interact with customers, settle claims and underwriting. The growing use of machine learning and artificial intelligence technologies in business has also led to a dynamic market environment with many new areas of risk and the need for new insurance solutions.

One of the promising areas related to digital technologies for insurers is the use of cryptocurrencies as assets for the placement of free reserves, and in the future, subject to their legalization, and insurance reserves [3].

The most interesting prospects of blockchain technologies are implemented in the insurance industry when working with customers and partners, which requires intensive constant exchange of large amounts of information (Table 1).

Table 1

Application of blockchain technology in the insurance industry

Digital technologies	Content and its application
Smart contracts	Smart contracts are a set of program codes - triggers that are activated in the event of circumstances that require insurance payments. Smart contracts save a significant amount of time required for the analysis of insurance cases and prompt payments, and blockchain technology will ensure a sufficient degree of transparency for customers, government and supervisors.
Insurance telematics	The use of blockchain technologies in the analysis of insurance risks for car owners will allow in exchange for access to the history of fines, analysis of driving style and other factors to obtain an insurance product at the best price.
Register of protected data in health insurance	When translating medical data and registers into a blockchain format, the patient gets the fullest opportunity to control their own medical data and allow certain individuals and organizations to have access to them. Each patient will be able to control which medical facilities will have access to his or her medical history and to observe who uses this access and how. Thanks to blockchain technologies, such registers will be protected from hacking and data forgery. By being able to access this data, insurance companies can significantly reduce the cost of a health insurance policy for a client, because now the insurance company is forced to take the client at his word and make risks in the cost of the policy, or send him for medical examinations.
Internet of Things (IoT)	This technology involves devices to perform certain actions without human intervention. All devices in homes, cars, on the user perform information processing, analysis and exchange with each other, while remaining private. This will increase security and privacy when using devices connected to the Internet and, depending on the results, make decisions and perform certain actions.
P2Pinsurance	The technology is designed for customers who want to insure, unite in similar groups and form a general insurance fund from which payments will be made in the event of insured events. P2P insurance companies earn on the commission they charge for their services. The attractiveness of the service for the client is provided by the ability to return part of the funds intended for payments for insurance cases. The fewer insured events, the more money a P2P service client can return.
Microinsurance	In the implementation of individual microinsurance insurance services, blockchain acts as a third party (guarantor).

Thanks to the use of the blockchain in insurance it is possible to achieve:

- strengthening the interest of customers in insurance products;
- updating the list of services;
- increase efficiency, growth in developed markets;
- transition to digital technologies as following the world trend;
- cost reduction through process automation;
- creation of decentralized cloud storage with a high level of protection for data storage. Blockchain technology is able to bring innovative solutions that provide high speed, complete control and transparency to all sectors of the insurance market. Its introduction will bring about revolutionary changes for an industry that has not

changed for a long time. Thus, we can conclude that the development of the insurance market is increasingly dependent on the introduction of new technologies in the digital economy that affect the insurance industry. Thus, the blockchain already helps insurance companies save time, increase the transparency of insurance services, prevent insurance fraud, follow the rules and develop the best insurance products [6].

Let's consider three options for using the blockchain in the insurance industry. According to the FBI, insurance fraud in the United States costs more than \$ 40 billion a year. The good news is that insurance companies can improve their claims processing three times faster and five times cheaper using blockchain technology. Blockchain technologies have entered the international insurance market - large-scale projects have launched several major alliances. Blockchain has become popular in various industries. Its key advantage is the ability to secure the data stored in it. This information cannot be accessed from a single node, and the data is cryptographically protected. Therefore, the blockchain is much harder to break and make retrospective corrections. Today, the blockchain is actively used to exchange information, usually in multilateral business processes. Previously, in order to coordinate all actions and documents, each of the participants had to integrate into each other's information systems. Now it is enough to make edits in the link of a chain. A survey of about 143 American insurance companies, conducted by the American Association of Insurers and FICO, showed that insurance fraud accounts for 5-10% of all insurance claims. Blockchain using decentralized systems can reduce the share of such fraudulent claims to almost zero. One of the effective ways to ensure maximum security, ease of submission and processing of requirements for consumers is the use of a blockchain, which will help to seamlessly combine multiple data points from different sources (depending on location and analytics). This can lead to a significant reduction in the number of fraudulent claims. Insurance companies can connect to a distributed blockchain registry, which is responsible for distributing multiple streams of information and documents. This may include third-party reports, evidence from the scene, police comments, and so on. Some vital steps in filing claims can be fully automated. For example, an accident can quickly initiate the creation of a new settlement case, when sending signals to the medical support service or the police, everything happens at the same time [5]. Blockchain can simplify the processing of risk reinsurance data, as well as keep it in a distributed register. This ensures that reinsurers receive verified data in real time without any falsification due to the influence of third parties. Getting accurate real-time data is crucial, whether you're investing in stocks or making risky investments online. In other words, they can obtain data directly from the original source without the need to involve insurers. Blockchain technology also facilitates faster and more efficient allocation of capital to help meet future claims. In most cases, insurers deal with several reinsurers who may be interested in a single reinsurance contract. In this case, reinsurers are expected to exchange data with each other, which complicates operations and further complicates the reinsurance process. Smart contracts offer a quick solution to this problem. The problem of reconciling premium and loss transactions between the insurer and reinsurers is minimized (or eliminated) because the database will always

be up to date. According to several studies, the blockchain could halve operating costs by reinsuring the sector by \$ 5-10 billion. Some insurers, such as Allianz, AIG, Aegon and Swiss Re, are already implementing these innovations in the blockchain, forming the B3i corporate consortium. P2P insurance is not a new concept that has been used for a long time. Peer-to-peer insurance companies whose customers can directly influence the services they use. Such insurance companies do not have offices, marketing budgets or intermediaries, so the costs are lower. The principle of mutual insurance means that consumers of insurance services instead to pay for insurance to a professional corporation, they form a community and form their own mutual aid fund, from which payments are made to victims of adverse events. At the same time, the classic P2P insurance involves the absence of any intermediaries and the implementation of mutual insurance on a non-commercial basis. If in classic professional insurance in case of breakeven of clients all profits go to the insurance corporation, in P2P-insurance a positive result is either shared among community members (returned), or directed to the goals predetermined by the community. Development of smart contracts that will simplify damages due to bad weather conditions, which may cause property losses is one of the exclusive obligations of insurance companies. These contracts are designed taking into account all types of measurements, including weather readings and sensor data, depending on the circumstances.

The goal is to make these statements less subjective and reliable. Today, smart contracts are really smart because they are now fully used in the P2P insurance markets. Blockchain made this possible by ensuring that such high-tech insurers could collect higher insurance premiums compared to traditional insurance contracts. The insurance market has long been little interested in blockchain, other technologies were used to digitalize the business. It goes without a request to use smart contracts to automate the payment of insurance ins refunds and the creation of p2p platforms, on which insurance was carried out without intermediaries. However, the implementation of such projects faces a number of difficulties, and not only of a technical nature. For example, automation of insurance reimbursement payments should exclude unreasonable refusal of payment. But such cases are already automated. Then the question is how much blockchain is cheaper. The opportunities promised by the new technology made the introduction of distributed registlasses in the industry only a matter of time. For the insurance market, the fight against fraud is critical — the registration of insurance contracts retroactively. Here blockchain allows you to completely eliminate the possibility of forgery of documents by unscrupulous partners and agents. Swedish blockchain company Haidrun was founded in 2019 to develop the next generation blockchain technology. As a result, a corporate blockchain platform has appeared that combines powerful blockchain technologies of private distributed registry (DLT), with artificial intelligence (AI) mechanisms to ensure high transaction speed, security and scalability, interaction with existing systems and significant cost reduction.

The advanced features of the Haidrun platform reveal the real business advantages of blockchain and can be deployed locally or blockchain solutions as a

service. Haidrun's blockchain platform for insurers eliminates suspicious and repetitive transactions by reliably and chronologically registering each event, document or transaction. After checking the action, the data is cryptographically encrypted into data blocks and become unchanged, which allows you to verify the authenticity by providing records. Haidrun can also create personalized smart contracts for fast and secure processing of insurance claims, payments and reimbursement of expenses. Regarding insurance and re insurance, blockchain technology can provide accurate calculation of reserves based on current contracts, to provide a deeper understanding of how claims are paid. This ensures that high-precision data is received that help to insure and balance the risks of taking into account specific risks with a much greater degree of confidence. The Haidrun platform is a flexible and scalable private blockchain without open source, built on advanced architecture, using artificial intelligence mechanisms. It eliminates most of the complexity of public blockchain, and unlike public blockchains, where there is no responsible person and everyone can interact with the blockchain, private networks retain control, eliminate illegal activities, ensure a high level of regulation and avoid variable costs and performance fluctuations associated with public platforms, the company said in a statement.

Starr Insurance and Liberty Mutual, leading property and accident insurance companies (P&C), have helped NYDIG, a provider of cryptocurrency technology and investment solutions, raise \$ 100 million in additional capital for growth. Insurers have joined existing investors such as New York Life and MassMutual. At the same time, NYDIG announced the appointment of Mike Sapnar, CEO of Trans Re, global head of insurance solutions. In his new role, Sapnar will oversee NYDIG's insurance business, helping to accelerate cryptocurrency-based innovation in the global P&C industry. Sapnar is joined by NYDIG Chief Insurance Officer Matt Carey, who will focus on cryptocurrency solutions for U.S. life insurance providers and annuities. Prior to joining NYDIG, he was a co-founder and CEO of Blueprint Income, a leading online annuity market recently acquired by MassMutual at Stone Ridge. NYDIG is owned by Stone Ridge, a holding company that also controls Stone Ridge Asset Management, an investment manager focused on alternative risk premiums, managing a number of mutual and private insurance (ILS) securities and reinsurance fund strategies. Many experts see the potential of the cryptocurrency insurance market and believe that the blockchain will take the insurance industry to a new level, as it will eliminate intermediaries in the entire chain of the process. While the legal status of cryptocurrencies is not uniform around the world, and investing in cryptocurrencies carries great risks, pioneers of blockchain insurance have to take into account many nuances in working in a new market. But despite the difficulties, cryptocurrency insurance is taking the first sure steps by offering new products and services to the market. ICO investments can be insured in different formats, depending on the legal status of the ICO in a given country. For example, if the legal definition of a token falls under the category of "goods", the insurance can be engaged in a company that has a license to work directly with the property. If the digital currency is recognized as a means of payment, then this case is not about

insurance, but about various stock mechanisms, such as hedging. This hedging mechanism is already in place on many cryptocurrency exchanges in the form of margin trade, where a bidder can buy or sell ("stand in a short position") cryptocurrency, including not having it in its assets in full ("with a shoulder"). But the high volatility of cryptocurrency quotes now makes such a decision difficult to apply. ICO fraud insurance is not yet used on the market. Affected investors, as a rule, go to court on their own. The cryptocurrency insurance market offers more services than the ICO insurance market. It is worth noting that exchanges are the most popular place to store cryptocurrencies. Inside the exchange you can convert, trade and spend. But the danger of these sites is that they are periodically "feverish". At this stage, investors are not considering little-known and clearly suspicious exchanges, the withdrawal of funds from which usually eats everything that has been traded. Large and reliable trading platforms are also at risk. They are a tasty morsel for hackers. Moreover, the more popular the exchange, the more actively they try to break it. On the positive side, it can be said that large exchanges often return stolen assets to users, the reserve fund account. But it may be that no fund will be enough to cover the losses. It is possible that cryptocurrency insurance in the future may become one of the most popular services among investors.

The insurance company has to create a large enough fund for insurance payments and in the current realities of the market no one will go. There may be surrogate insurance products, small print papers, which do not give any guarantees. The only way to save money is to trade on decentralized exchanges. Traditional cryptocurrency insurance is a combination of insurance services and smart contracts. In essence, this is a classic insurance of household goods, but with the use of blockchain technology. Belay and Rega.Life blockchain projects offer services in this direction. Belay is working to increase insurance transparency and optimize paperwork. Rega.Life also uses smart contracts, blockchain is responsible for the transparency of processes, and financial transactions are in cryptocurrency and have no territorial boundaries and fees. Prospects for cryptocurrency insurance largely determine the future of the insurance market, which depends entirely on the regulation of the crypto market - in Ukraine in particular and in the world in general. Determining who will work in the market - licensed insurance companies or fintech and insurance tech companies, will allow only the right status of cryptocurrencies: goods or money. In the near future, the crypto community can reasonably expect the issuance of default insurance (CDS - Credit Default Swap), when a certain amount is paid by smart contract in the absence of payment to the owner of insurance from third parties (issuers) and insurance against illegal actions cryptocurrencies and depositories. Crypto market insurance can give a serious impetus to its growth and development. After all, the higher the quality of the ICO, the more coverage should be expected from the insurance company, says the founder of the rating agency for the Assessment of Digital Assets of DigRate Arseniy Poyarkov. And this will allow users and the market to get more liquid and successful blockchain projects in the near future. Starr Insurance and Liberty Mutual, which are among the leading insurance companies dealing with property and accident insurance (P&C), helped NYDIG, a

supplier of technologies and investment solutions for cryptocurrencies, to attract 100 mln. dollars of additional capital for growth. Insurers have joined existing investors such as New York Life and MassMutual. At the same time, NYDIG announced the appointment of Mike Sapnar, CEO of Trans Re, global head of insurance solutions. In his new role, Sapnar will oversee NYDIG's insurance activities, helping to accelerate cryptocurrency innovation in the global P&C industry [14, p.542].

Recently, interest in cryptocurrency is growing, the impetus for this is the rapid growth of its rate in the global financial market, which made this type of electronic money quite popular, especially in early 2017. Cryptocurrency is a digital currency, the unit of which is a coin that is protected against counterfeiting, in fact it is encrypted information that cannot be copied. Cryptocurrency is issued directly in the network and is in no way related to any currency or to the state currency system [9]. The first type of cryptocurrency appeared in 2009, its value was \$ 0.3. USA. Today, there are 796 popular cryptocurrencies in the world, which differ in the method of cryptography, ie their own unique data encryption [15].

The most popular of them are Bitcoin, Ethereum, Dash, Bitcoin Cash, Litecoin. In May 2016, the first Ukrainian cryptocurrency appeared - Karbovanets (Ukrainian Karbowanec or KRB). As of August 15, 2016, its value was 2.5 hryvnias. According to some investment market experts, investments in cryptocurrency are quite promising, due to the constant growth of its exchange rate. The attractiveness of Bitcoin lies in the ever-increasing rate: the first investors to buy Bitcoin in 2011-2012 received millions of dollars. Those who bought Bitcoin between 2013 and 2016 earned hundreds and tens of thousands of dollars. And in early 2017, investors at least doubled their investments. According to statistics, the Bitcoin exchange rate as of February 1, 2016 was \$ 377.6. USD, and as of 02.01.2017 - already 948.2 dollars. USA. The rapid growth of Bitcoin took place in the second quarter of 2017, and as of 01.08.2017 the value of Bitcoin was \$ 4,701.5. USA., And as of 17.05. 2018 - \$ 8,327.03 USA. Experts predict an increase in demand for Bitcoin, as their issuance is limited to 21 million coins, and sold on the market 16 million, leaving 5 million coins [10]. In addition, more and more developed countries are legalizing cryptocurrencies, they are being used by banks and investment funds, which leads to a significant influx of financial resources into the crypto market. Yes, O.O. Poplavsky found the following dependence: the use of cryptocurrencies, including Bitcoin, is allowed in countries with high insurance densities and developed insurance industries.

The position of cryptocurrency is illegal in those countries where the high share of the shadow economy and the low percentage of coverage of the insurance field [11, p. 179]. However, each investor in the case of investing in cryptocurrency must take into account a number of risks that may arise and be realized in the process of such investment. The main advantages of using cryptocurrency as an innovative means of payment include:

- 1) low cost of transfers, which is especially true for microtransfers and microinsurance;
- 2) the relative velocity of money between different users and countries;
- 3) simplicity and flexibility for the user with a simultaneous security system;

4) public registration of transactions and pseudonym of accounts ensure both transparency of the system and its secrecy;

5) impossibility of confiscation of funds;

6) independence from the banking system for capital movements;

7) reduction of bureaucratic obstacles [12, p. 179]. In addition, cryptocurrency operates without any supervisory authority or central bank; and transaction processing and issuance are carried out collectively by network members, which allows to conduct any operations anonymously, without user identification [11]. The thesis that insurance companies objectively have an investment function does not need to be proved. It has long been thought that the main task of the insurance company is to provide insurance services directly, and investing plays a secondary role, but in modern conditions, insurance transactions can be considered as a way to accumulate funds for further investment, i.e. the functioning of insurers as institutional investors. foreground. In order to increase the efficiency of investment activities, the insurance company should first determine its most profitable areas (types of assets in which to invest investment resources). Investments in cryptocurrency show a high rate of return, but at the same time are characterized by high volatility, so insurers must determine the maximum allowable losses and forecast financial results for changes in investment policy. Activities related to the use of blockchain technologies and cryptocurrencies in the insurance business are constrained by a number of circumstances, the main ones being:

- imperfection of legal regulation of cryptocurrency issuance and circulation;

- non-transparency of insurance activities;

- low capitalization of domestic insurers;

- high loss of insurance activities for the most popular types of insurance, which requires covering the losses of insurance activities with income from investment and financial;

- lack of sufficient resources free from obligations (own funds);

- fear (distrust) of the latest technologies and tools;

- lack of competition.

The use of blockchain technology in the field of insurance service will allow insurers to achieve positive financial results by reducing costs, especially liquidation and collection, and increase the efficiency of the company as a whole. In order to give the investor the right to choose to invest in cryptocurrency, a SWOT analysis of such investments was conducted, in particular Bitcoin, which establishes a link between the most characteristic opportunities, threats, prospects and disadvantages for the investor. The results of SWOT analysis can be used to form and choose a strategy for investing in cryptocurrencies. It does not contain complete information for making a final decision, but it allows you to streamline the process of considering all available information using your own ideas and beliefs. Active development of cryptocurrency relations requires legal regulation. Now a legal vacuum has formed in Ukraine. According to the current legislation, cryptocurrency cannot be used for mutual settlements, therefore, crypto as a means of payment is insolvent. Therefore, citizens and legal entities that use cryptocurrency conduct operations and conduct

business at their own risk, without any guarantees from the state. In addition, the difficulty in the practical implementation of blockchain technology is that it involves a change of management paradigm and the transition from a hierarchical model to a flat one, in which decisions are made decentrally, and the whole process is transparent to its participants. Obviously, this entails the need to rethink business processes, approaches to managing and protecting the information of financial service providers.

References:

1. Aleksandrova M.M. (2002), Insurance: Teaching method. manual. 208 p., Ukraine.
2. Available about cryptocurrencies: what is Bitcoin and how to «mine» it, available at: <https://znaj.ua/techno/dostupno-pro-kryptovalyutysho-take-bitcoin-i-yak-jogo-majnyty> (Accessed: 11 December 2021)..
3. Bitcoin and Blockchain: what it is and how it works in Ukraine and the world, available at: <http://versii.if.ua/novunu/bitcoin-ta-blockchain-shhotse-take-yak-pratsyuye-v-ukrayini-ta-sviti/> (Accessed: 10 December 2021).
4. Glushchenko N. (2017), Blockchain in Ukraine: What is this technology and how it is useful, available at: <https://112.ua/statji/blokcheyn-v-ukraine-cto-eto-za-tehnologiya-i-chem-ona-polezna-417161.html> (Accessed: 9 December 2021).
5. Ilyana L.N. (2017), How the blockchain will change our world Accounting and analytical support - the information basis of economic security of economic entities: Interuniversity collection of scientific papers and results of joint research projects: in 2 parts. Moscow, pp. 163–168.
6. Insurance 2020: Innovation beyond old models, available at: <http://www935.ibm.com/services/us/gbs/thoughtleadership/> (Accessed: 12 December 2021).
7. Klyuev A.V. (2017), Review characteristics of the potentials of practical application of blockchain technology in economics. Scientific notes of TOGU, available at: http://pnu.edu.ru/media/ejournal/articles-2017/TGU_8_32.pdf (Accessed: 8 December 2021).
8. Cryptocurrency in Ukraine: everything you need to know. available at: <http://nk.org.ua/ekonomika/kriptovalyuta-v-ukrayini-vse-scho-trebaznati-116647> (Accessed: 10 December 2021).
9. Melnichenko O.V, Gartinger R.O. The role of blockchain technology in the development of accounting and auditing , available at: <http://file:///C:/Users/User/Downloads/191-1041-1-PB.pdf> (Accessed: 9 December 2021).
10. Nagaichuk NG, Tretyak N.M. (2018), Possibilities of using Blockchain technology in Ukraine . *Scientific Bulletin of Uzhgorod National University*, vol. 19, pp.104-107.
11. Nagaychuk N.G. (2018), Possibilities of using blockchain technology in insurance, - available at : http://visnyk-econom.uzhnu.uz.ua/archive/19_2_2018ua/24.pdf (Accessed: 11 December 2021).
12. Poplavsky O.O. (2016), Cryptocurrency as an object of economic analysis

in insurance companies. *Bulletin of ZhSTU*. Series: Economic Sciences. № 4 (78). pp. 178–184.

13. Spletukhov Yu.A., Dyuzhikov E.F. (2004), Insurance. *Textbook*. INFRA-M, 312 p.

14. Sukhanov E.E., Shtang K.S., Aleshko R.A. (2017), Blockchain technology: challenges, limitations, options for improvement. *Synergy of Sciences*. № 14, pp. 540–546, available at: <http://synergy-journal.ru/archive/article0908> (Accessed: 12 December 2021).

15. Tkachuk V. V. (2018), Research of cryptographic algorithms for key generation, available at: http://ela.kpi.ua/bitstream/123456789/23445/1/Tkachuk_magistr.pdf (Accessed: 7 December 2021).

16. Vlasov A.I. (2017), System analysis of blockchain data exchange and storage technology. *Modern technologies. System analysis*. Modeling, № 3 (55), pp. 75–83.

17. Voronov M.P. (2017), Blockchain - basic concepts and role in the digital economy. *Journal of Fundamental Research*, vol. 9-1, pp. 30–35.

4.5. DEVELOPMENT OF THE AGRARIAN LOGISTIC SYSTEM OF UKRAINE IN THE CONDITIONS OF DIGITAL TRANSFORMATION OF THE ECONOMY

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Summary. The article is devoted to the research the efficiency of the development of the agrarian logistics system of Ukraine, its problems and prospects development. The purpose of the study is to analyze the main indicators of development of the logistics system, to determine the relevance of modern information technology in the field of logistics and agribusiness, to identify the main logistics trends in the part of the digital transformation in Ukraine. The international ratings of logistics infrastructure are considered. The integrated assessment of the transport and logistics potential of the country is carried out. The main indicators of foreign economic activity and the dynamics of freight traffic, which reflect the level of development of agrarian logistics in the country, are analyzed and evaluated. Realization of powerful logistic potential through introduction of innovative technologies and digital transformation will promote development of agrarian sector of economy of Ukraine. Analysis of the development of the logistics system of Ukraine in the context of digital transformation of the economy is a very important issue. Next research should be aimed at specifying the tools, methods and necessary resources that will identify and model the country's agrarian logistics strategy.

Keywords: information technologies, digital transformation, logistics system, agrarian logistics, agricultural sector, foreign economic activity, LPI.

The agricultural sector is one of the priority areas in Ukraine's development

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