

## CRYPTOCURRENCIES AS A FORM OF PAYMENT IN ELECTRONIC COMMERCE

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**Abstract:** In recent years, a special type of electronic, i.e. digital currency, which is better known as cryptocurrency, has been developed. The increasing use of cryptocurrencies in the world leads to many new opportunities in the world of electronic commerce, and the formation of a completely new, decentralized payment system. Degree of adoption of cryptocurrencies on a global level varies from country to country. In some more developed countries, cryptocurrencies are slowly becoming a regular system for payment of goods and services, so most sites offer the possibility of paying in cryptocurrencies. In our country, that system has not been much developed yet and there are not many sellers who receive cryptocurrency as compensation for sold goods. The goals of this research study are to examine what opportunities cryptocurrency owners have for exchanging cryptocurrencies for traditional money, what opportunities for purchasing goods and services are available to cryptocurrency owners, and which cryptocurrencies are most widely used in the Republic of Serbia.

**Keywords:** cryptocurrencies, Bitcoin, Ethereum, crypto wallet, Republic of Serbia

## **1. Introduction**

For centuries people have strived to develop an adequate means of payment. Initially, metal coins were used as a means of payment. It was a fixed amount of gold or silver, with a stamped symbol, which served for recognition. That symbol, first of all, indicated how much precious metal the coin contained, and secondly, which government issued the coin and guaranteed the content of precious metal in it (Dašić, 2023).

Coinage was supplanted by paper money, which was in fact just a guarantee of payment, that is, a guarantee that value would be transferred to the seller. In such trades, trust was based on an intermediary who issued a paper guarantee that covered the value of the exchange of goods. Each country had to have a precious metal backing for the money that was in circulation at that time.

With the advancement of technology, electronic payment systems were slowly starting to appear. In the beginning, payment cards had been dominating the world of electronic payment systems for years. Later, electronic wallets, a mobile payment system, had been

developed until 2008 when cryptocurrencies appeared.

Over time, the need for states and banks to have cover for the money they issue ended, and money transactions were reduced to a record of those transactions on a computer. This situation led to the centralization of the payment system and led to a great influence of financial institutions on the national economies of the states. This, then, led to the development of digital currencies, i.e. cryptocurrencies, which somehow decentralize the payment system.

## **2. Alternative payment methods in electronic commerce**

Electronic commerce is changing very quickly, and therefore it is not easy to set a precise definition of electronic commerce. In addition to the technological aspect, it is necessary to emphasize the economic aspect and define electronic commerce as a new market that offers new types of goods and services, such as digital products through digital processes. Retailers of physical goods are also involved in digital processes, such as online ordering, market research and payment, which are parts of

this new market (Vladisavljević, et al., 2023).

Electronic commerce represents the purchase and sale of goods and services through technology, via the Internet and computers (Dašić, et al., 2023; Dašić, G. 2023), as well as the transfer of money, using information technologies. Capital transfer is done through modern payment systems, and one of the simplest divisions of these payment systems is onto payment cards and alternative payment systems. There are alternative payment methods that have a local character, but the cryptocurrencies we are researching are widely accepted and have a global character.

Cryptocurrencies are closely related to Blockchain technology, which provides users with the maximum possible data protection by using the function of cryptographic data. The concept of Blockchain technology is based on the idea of forming a digital system composed of nodes, and that all information within the system is exchanged between all nodes of the system. Each individual node in the system has equivalent information that was achieved by applying an algorithm based on consensus building. Basically, Blockchain is a computer file,

which is used to collect data – information. Blockchains have three characteristics in common, which when put together work differently than all other types of computer files.

In a short time, cryptocurrencies have become very popular in the world, and are considered one of the most important ways of earning. The number of cryptocurrencies in circulation today is almost 9,000. Unlike classic money that is used based on bank transactions, and therefore must be stored in a bank account, cryptocurrencies are stored in a "digital wallet", which the user can open on a website specialized in that service. Digital wallets used for the purpose of storing cryptocurrencies are called crypto wallets. The crypto wallet is completely free, we will give an example of the ECD wallet, which, in addition to the service of storing cryptocurrencies, offers options for depositing dinars, as well as receiving, sending, buying or selling cryptocurrencies for dinars.

There are different types of crypto wallets, which are divided into two groups: software and hardware wallets. Most crypto wallet providers are software-based, which makes their use more convenient than hardware wallets. However, hard-

ware wallets are usually the safest alternative. Depending on the needs, that is, the criteria that are important to us in Serbia, we can choose one of the following crypto wallets: Best Wallet – the best crypto wallet in 2024; Coinbase – a crypto wallet for beginners; eToro – the most famous crypto wallet; Binance – Best Wallet App for Trading; Huobi - the best app to earn interest on crypto; Trezor - Secure Bitcoin Hardware Wallet; Luno - the best Bitcoin account for easy use; Exodus – free Bitcoin wallet for desktop and smartphone; Ledger Nano X – One of the safest crypto wallets to buy.

Cryptocurrencies can be obtained by mining or direct purchase on online markets, which is simpler and easier. Mining is based on the use of special computer equipment, which, by solving mathematical algorithms, enables users to "mine" cryptocurrencies. This method is more complex and demanding. The "miners" are the most essential part of any cryptocurrency network, as they are the ones who bring the cryptocurrency to market. With their expensive equipment, they solve cryptographic tasks, the difficulty of the tasks increases proportionally with the number of people

trying to solve them, that is, with the number of people mining that cryptocurrency. The more popular a cryptocurrency is, the more difficult the mining process becomes, which is the case with Bitcoin today. As for Bitcoin, it should be emphasized that holding such mined cryptocurrency is much simpler compared to trading and carries much less risk. Therefore, it is possible to estimate that currently around 80% of Bitcoins are held in profit, but not sold.

There are a number of cryptocurrencies that can be mined, the most famous of which are Bitcoin and Ethereum. Without going into a more detailed analysis, we will point out the most significant difference between the two most famous cryptocurrencies. The most significant difference is the fact that Bitcoin is designed as a digital currency and in order to be realized as such, the Blockchain technology was made, which, when it comes to Bitcoin, is only used to record transactions between Bitcoin users. On the other hand, Ethereum is designed to be adaptable and flexible, any programming code can be written on its chain, not just completed transactions. In fact, Ethereum is such a Blockchain that allows users themselves to create

any kind of operations, regardless of their complexity, and not just a predetermined group of operations, as is the case with Bitcoin. It should be emphasized that Ethereum cannot be mined, i.e. it is not practical as of 2022 when the Ethereum network transitioned from a Proof of Work model to a Proof of Stake model. Proof of Work - in this algorithm means that miners use computers to solve complex mathematical problems and verify transactions. Proof of Stake means that instead of solving mathematical problems, users lock a certain amount of cryptocurrency in the network as "invested capital" or "stake". The main goals of this transition are better stability, lower energy consumption and greater network security.

### **3. Research and data analysis**

The aim of this study is to check to what extent cryptocurrencies are represented in our country and how many people deal with them. Also, considering that exchanging and performing transactions in cryptocurrencies is still in its infancy, the research should show us to what extent cryptocurrencies are used as the form of payment for goods and

services. We will try to give answers to the following questions: what percentage of people use cryptocurrencies, what opportunities cryptocurrency owners have for exchanging cryptocurrencies for traditional money, and what opportunities for purchasing goods and services are available to cryptocurrency owners. This research should help us to: learn about the latest trends in the world of cryptocurrencies; to get a better insight into the structure of users who use cryptocurrencies; to get a better insight into cryptocurrency trading opportunities.

The research was carried out in the north of Kosovo and Metohija, in four municipalities located in that territory: Kosovska Mitrovica, Zvečan, Leposavić and Zubin Potok. The total number of respondents in this research is 35. During the research, demographic segmentation of respondents was used. The respondents were divided into two age groups, the first group of respondents, 18-30 years old - 16 people; the second group of respondents, 30-45 years old - 19 people.

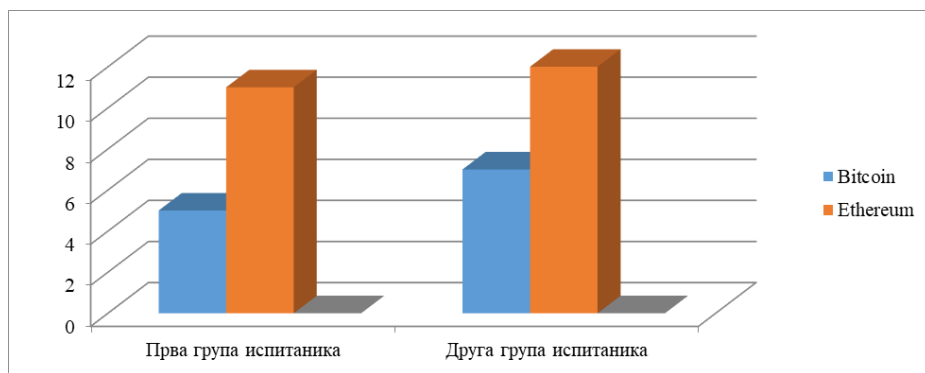
The questions the respondents were asked during the survey are: what cryptocurrencies do you use (Bitcoin, Ethereum, other)? Do you use crypto wallets? Do you have the option to pay for products with

cryptocurrencies? Is the number of merchants that allow payment in cryptocurrencies increasing?

When answering the first question, respondents mostly mentioned Ethereum. Respondents who answered that they use Bitcoin, stated that it is easier to trade on the stock market, and that they are convinced that the value of this cryptocurrency will increase over time, so they think that it is a safer investment. They also answered that they use other cryptocurrencies, but primarily for the purpose of exchanging cryptocurrency for money.

When the first group of respondents was asked, "Do you have the possibility to pay for products with cryptocurrencies?", 14 people have stated that they do not have any possibility to pay in our country, that is, that they cannot buy the products they are interested in, while 2 people have stated that there is the possibility to buy some products that they are interested in in our country as well. In the second group of respondents, 16 people have stated that they do not have the possibility to pay in our country, that is, they cannot buy the

**Figure 1.** What cryptocurrencies do you use? - graphic view



The first group of respondents

The second group of respondents

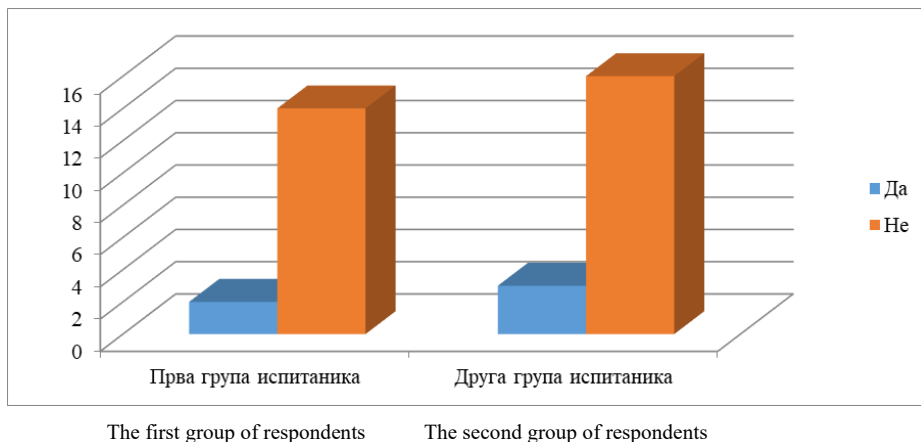
As for the crypto wallet itself, all respondents generally use different crypto wallets, there is none that stands out. Some of the crypto wallets mentioned are: eToro, Coinbase, Binance, Exodus.

products they are interested in, while 3 people have stated that there is a possibility to buy some products they are interested in, in our country as well.

As we can see from the answers given, the majority of the respondents expressed a negative opinion on this issue, i.e. in the conversation with them, we have learnt that there is still no market for cryptocurrencies in the Republic of Serbia, that it is not possible to use them for the purchase of goods and services, i.e. that only a small number of sellers offer possibility through their websites, and often they are not interested in these products that much.

tive form, while 8 people have stated that they are not aware of such cases in our country. Based on the answers given to this question, it is evident that the respondents are generally not familiar with online stores that allow payment in cryptocurrencies, that is, that such online stores do not have adequate marketing, thanks to which a wider circle of customers could be familiar with the possibilities of paying with cryptocurrencies. Those respondents who are familiar with such

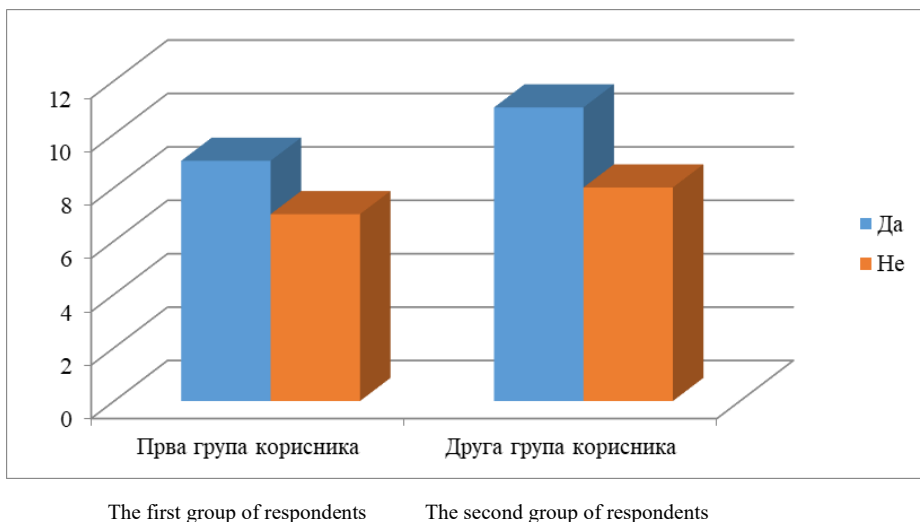
**Figure 2.** Do you have the option to pay for products with cryptocurrencies? –graphical view



In the first group of respondents, 9 people have answered in the affirmative form, while 7 people have stated that they are not aware of such cases in our country. In the second group of respondents, 11 people have answered in the affirma-

online stores believe that, although there are more of them compared to the previous period, there are still not enough of them.

**Figure 3.** Is the number of merchants that allow payment in cryptocurrencies increasing? - graphic view



#### 4. Conclusion

Over 200,000 people owned some kind of cryptocurrency in the Republic of Serbia in 2023 and an interest in owning cryptocurrency in our country grew after it was recognized by the Serbian legislation. With the adoption of the Law on Digital Assets, virtual currencies are recognized as virtual assets, i.e. as a digital record of value that can be digitally bought, sold, exchanged or transferred.

Although cryptocurrencies in the world, as well as in our country, are increasingly seen as a good investment and not only a means of pay-

ment, digital currencies find different forms of application in payment in our country. If you do not have a possibility to buy, for instance, a Tesla car with cryptocurrency, which is a new payment option that this company offers, you do not have to go all the way to the US to spend your coins. Technology and electrical devices, gaming equipment can now be purchased with cryptocurrencies in Serbia, and further development of legislation is expected to open up space for new traders who will empty your digital wallet (Radaković, et al., 2023). There is, for instance, "Cryptoshop", as they call themselves, "the first crypto store" where you can mostly buy technical and electrical devices and



pay for them in one of the cryptocurrencies at your disposal.

Although more and more people deal with cryptocurrencies and own cryptocurrencies in the Republic of Serbia, the possibility to pay in them is quite small. We have also found that, although cryptocurrencies have not been fully implemented in electronic payment systems yet, payment with cryptocurrencies is possible in some places. We especially emphasize that there are still a large number of cryptocurrency owners who look at them as an investment and not as a means of payment.

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## KRIPTOVALUTE KAO OBLIK PLAĆANJA U ELEKTRONSKOJ TRGOVINI

**Rezime:** Poslednjih godina se razvija posebna vrsta elektronske, odnosno digitalne valute, koja je poznatija pod imenom kriptovaluta. Sve češća upotreba kriptovaluta u svetu dovodi do mnogih novih mogućnosti u svetu elektronske trgovine, i formiranja potpuno novog, decentralizovanog sistema plaćanja. Stepen primenjivosti kriptovaluta na svetskom nivou varira od države do države. U nekim razvijenijim državama kriptovalute polako postaju regularan sistem plaćanja roba i usluga, tako da većina sajtova nudi mogućnost plaćanja u kriptovalutama. U našoj državi, taj sistem još uvek nije toliko razvijen i ne postoji mnogo prodavaca koji primaju kriptovalutu kao naknadu za prodatu robu. Ciljevi ovog istraživanja su da se ispita koje mogućnosti vlasnici kriptovaluta imaju za razmenu kriptovaluta za klasični novac, koje mogućnosti za kupovinu roba i usluga stoje na raspolaganju vlasnicima kriptovaluta i koje kriptovalute se najviše koriste u Republici Srbiji.

**Ključne reči:** kriptovalute, bitcoin, eterijum, kripto novčanik, Republika Srbija