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Prospects for the development of electronic money as one of the development directions of the payment system.

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Abstract. This article discusses issues that are associated with such a concept as "electronic money". Information on electronic money based on smart cards and networks is presented, as well as characteristics of payment systems in the Uzbek segment of the Internet are described. The basic concepts and perspective directions of development of the electronic payment system are also considered. This article examines the tools for monetary regulation and recommendations for improving them to increase the coefficient of monetization of the economy.
Key words: money circulation, national payment system, banking system, electronic money, non-cash payments, electronic means of payment

Introduction. Today digital technologies are rapidly entering all sectors of our economy. The development of e-commerce, the formation of a competitive environment for payment service providers can be helped by reducing their costs for retail payments, the introduction of new and easy-to-use means of payment, which can be used to pay without the intermediary services of financial institutions.
The development of Uzbek non-cash payments over the past decades has been associated with the emergence of electronic means of payment.
Electronic means of payment is a constantly changing, innovative payment instrument, clothed in a tangible or intangible form, providing remote access to a bank account and allowing the transfer of non-cash funds without opening a bank account. Currently, electronic means of payment include bank cards, mobile banking, Internet banking, prepaid cards, "e-wallets", and this list may be updated in the future.
Literature review. The adoption of the Law of the Republic of Uzbekistan "On Payments and Payment Systems" has created a legal basis for the issuance, use and redemption of electronic money.
On the basis of this Law, the Central Bank has developed the “Rules for the Issue and Circulation of Electronic Money in the Territory of the Republic of Uzbekistan”, registered by the Ministry of Justice on April 29, 2020 (registration number 3231). According to government statistics and the Central Bank of Uzbekistan, the share of non-cash retail turnover in Uzbekistan is growing rapidly, but still lags behind global benchmarks. (Fig. 1.)
Analysis and results. As can be seen from Figure 1, Here is the graph showing the dynamics of non-cash transactions in Uzbekistan from 2022 to 2027. The blue line represents the estimated share of non-cash transactions as a percentage of GDP, projected to grow from 58% in 2022 to approximately 80% by 2027. The green dashed line shows the total turnover of non-cash transactions, expected to rise significantly, reaching about $107 billion by 2027

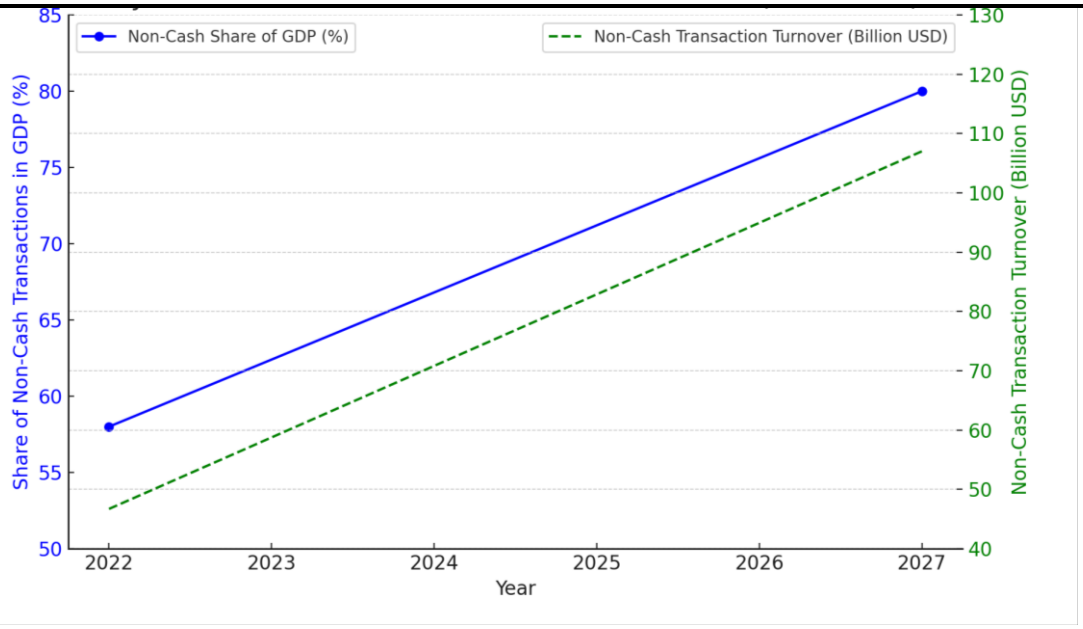

Figure 1. Dynamics of the share of non-cash transactions in Uzbekistan 2022-2027 (forecast)

Uzbekistan has seen rapid growth in non-cash transactions, supported by financial digitalization initiatives. In 2022, the share of non-cash payments and transfers accounted for roughly 58% of the country's GDP, marking significant progress. This growth is primarily attributed to advances in the financial technology market, including increased availability of digital payment options and legislative changes aimed at enhancing electronic money usage.

By 2027, non-cash transaction volumes are expected to grow sharply, with the total turnover potentially reaching between $107 billion and $125 billion. This expansion is also linked to the increasing use of point-of-sale financing and installment payment options, both online and offline, which further accelerate the adoption of digital payments. The government's strategic goal of full-scale digitalization by 2030 also aligns with this trend, suggesting continuous growth in non-cash transactions and an increasing role for financial technology in the country's economy.

These trends indicate that Uzbekistan's financial landscape is becoming increasingly cashless, with strong projected growth in digital transaction volumes and related financial services sectors. This trend makes it possible to reduce the shadow sector of the Uzbek economy, helps to reduce the level of inflation and prices for goods and services, reduces the cost of manufacturing and transporting cash, and improves tax collection.

The decrease in funds in current and demand accounts is associated with small incomes of the population, which prefers to keep their savings on time and savings deposits with a higher interest rate compared to current and demand deposits.

Time and savings accounts of individuals account for two thirds of the aggregate of all deposits. A significant part of transferable deposits, despite their lower rate compared to time deposits, are deposits of legal entities. The point is that transferable deposits can be withdrawn at any time, while time deposits can be withdrawn only after the expiration of the term specified in the contract.

Electronic money has a number of advantages and disadvantages. The ability to access an e-wallet from anywhere in the world is, on the one hand, an indisputable advantage,

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since to work with money, you only need a laptop, smartphone or tablet and the ability to access the Internet.

On the other hand, if an electronic wallet is hacked by a computer cracker (hacker) from another country, it will be very difficult to find the attacker and prove that it was not you who transferred all your money to another account.

Relatively recently, it became possible to purchase goods for electronic money in online stores, pay bills for housing and communal services, telephone, Internet. Electronic money in Uzbekistan is represented by such systems as WebMoney, Yandex.Money, Qiwi Wallet and others.

The next step in the development of electronic money is the emergence of cryptocurrencies. Today, more than 1,800 types of cryptocurrencies are distinguished, the most popular of which is bitcoin.

Bitcoin (from the English bit - bit and coin - coin) is a payment system that uses the digital currency unit of the same name and the data transfer protocol of the same name. Thus, to date, Uzbekistan has created and is successfully operating its own national payment system.

The monetary system of modern Uzbekistan is characterized by a significant decrease in cash turnover and an increase in non-cash payments. This tendency makes it possible to reduce the shadow sector in the Russian economy, increase tax collection, and reduce inflation and prices for goods and services. Electronic money is becoming more and more widespread in the Republic of Uzbekistan, the advantages of which are simplicity of storage, convenience of settlements and high speed of processing operations.

Money does not need to be printed, which accordingly reduces the cost of materials and equipment. Electronic money transactions take place not only using the capabilities of the Internet, but also using other means, such as a mobile phone.

The e-wallet can be accessed from anywhere in the world.

The Republic of Uzbekistan needs to develop such competitive industries as agriculture, the military-industrial complex, the space industry, information technology, energy, production, which will structurally transform and increase the export of products that are in serious demand in the world market.

At present, for the further development and improvement of the market for electronic means of payment in Uzbekistan, it is necessary, firstly, to develop a payment infrastructure designed to service these funds in the following ways:

• introduction at the state level of programs for attracting trade and service enterprises (including small businesses) to servicing electronic means of payment;

• encouraging credit institutions to interact with public and private enterprises that provide paid services, to create mobile projects aimed at simplifying the process of paying for services by the population.

Secondly, to carry out a scientific study of the nature and essence of electronic means of payment, both as a whole and separately for each type. The popularity of electronic means of payment, characterized by a great demand for them by the population, an increase in the number and volume of transactions performed with their use, provides the need for their further development. Determination of the nature and essence of electronic means of payment, development factors, vulnerabilities will prevent potential risks and stimulate a positive trend.

To assess the effectiveness of the infrastructure of the market of electronic payment systems, special indicators and calculation methods are required. As such a

methodology, you can use the methodology for evaluating e-commerce systems, since these systems have features and characteristics similar to electronic payment systems. In this methodology, the basis for the formation of criteria for the effectiveness of the innovative infrastructure of e-commerce systems is based on the principles of accounting for functional, operational and price indicators, as well as their dynamics. A comprehensive criterion for the effectiveness of the infrastructure of electronic payment systems in the work is proposed in the form:

$$К_{eff} = К_{func} * К_{exp} * К_{econ} \quad (1), \text{ where}$$

K func - is a group criterion for the functional efficiency of the system's innovation infrastructure.

To compare and select e-business systems and determine the factors that affect their application, mathematical decision-making methods were used, namely: the method of analyzing hierarchies, the method of fuzzy relation of preferences, and the method of additive convolution. Thanks to the application of these methods, the task was solved, which consisted in choosing the best electronic payment system from the two most popular in Uzbekistan - WebMoney and Yandex money.

The Hierarchy Analysis Method (MAI) is a mathematical tool for a systematic approach to complex decision-making problems. MAI allows you to structure a complex decision-making problem in the form of a hierarchy in an understandable and rational way, compare and quantify alternative solutions.

The analysis of the decision making problem at the Moscow Aviation Institute began with the construction of a hierarchical structure that included the goal, criteria and alternatives. The top level of the hierarchy (goal) is the rational choice of an electronic payment system. The second level (criteria): cost, terms of purchase, support by developers, user interface, provided functions. The third level (alternatives) is electronic payment systems: WebMoney and Yandex money.

The next stage of the analysis was to determine the priorities representing the relative importance or preference of the elements of the constructed hierarchical structure using the procedure of paired comparisons. Dimensionless priorities made it possible to reasonably compare disparate factors. The calculation result is presented graphically in Figure 2.

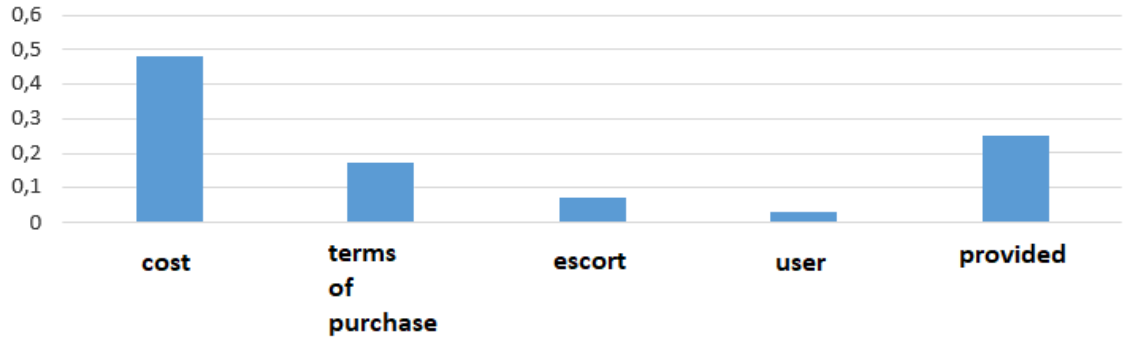

Fig. 2 - Comparison of parameters influencing the use of EPS

Based on the calculations performed, including from Figure 1, it can be concluded that the highest indicators are determined for the parameters cost and provided functions

(factors that most affect the use of EPS), the lowest indicator relates to the user interface (this factor has minimal impact on the use of EPS).

At the final stage of the analysis, a synthesis (linear convolution) of priorities on the hierarchy was performed, as a result of which the priorities of alternative solutions were calculated relative to the main goal.

As a result of our research, we came to the conclusion that WebMoney acts as the most rational alternative in relation to the Yandex money system, and the most important criterion for making such a decision is the cost of the store.

Thus, the method of analyzing hierarchies for comparing e-business systems made it possible to identify priorities for decision-makers and select the most appropriate system according to these priorities.

The method of fuzzy preference relationship allows you to determine the importance of the weights of the assessment criteria and to delineate the significance of possible alternatives. The most important advantage of this approach is its symmetry in relation to the goal and the ability to find the best solution in a clear and accessible form.

This approach includes a modification of traditional methods of mathematical programming and the construction of interrelated models. The algorithm is based on reducing the problem to models of multicriteria alternatives and choice in a fuzzy environment using fuzzy methods, the preference ratio for analyzing these models, which makes it possible to maximally separate the dominant alternatives.

Conclusion. The dynamically developing global Internet network, as well as electronic communications, have brought into our reality a new phenomenon in the economy - electronic payment systems and electronic money. More recently, few people could even think that it will be possible to buy and sell goods and services on the Internet, paying with digital currency. Summing up, it should be said that, based on the results of the analysis performed using the method of fuzzy preferences, a more acceptable alternative is the WebMoney product. And “cost” and “security” are the factors that maximally influence the use of electronic payment systems.

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