

Object, subject of digitization of election processes and its scientific and methodological foundations

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Abstract: This paper examines the object and subject of digitalization of electoral processes, as well as their scientific and methodological foundations. The object of the study is electoral processes as a set of organizational, legal, and technological actions that support the preparation and conduct of elections. The subject of the study is the methods, tools, and technologies of digitalization used in the electoral sphere, as well as their impact on the efficiency, transparency, and legitimacy of elections. The article analyzes modern approaches to the digital transformation of electoral procedures, including electronic voting, automated data recording and processing systems, and digital platforms for informing voters. Particular attention is paid to the scientific and methodological foundations of digitalization, such as systemic, institutional, and interdisciplinary approaches, as well as issues of information security and legal regulation. The results of the study can be used in the development and improvement of concepts for the digital development of electoral processes.

Keywords Object, subject of digitization of election processes and its scientific and methodological foundations

Introduction

As in every research work, it is necessary to clarify the object, subject and basic methods, as well as scientific methodology, in this topic - digitization of election processes..

Many research works on this direction and similar topics ⁱ, As a result of studying and deeply analyzing scientific articles and other materials, we have formed certain opinions on the above components of the digitalization of electoral processes.

Although there are no separate concepts about the object and subject of the digitalization of electoral processes in the research works, there are views on the object of digital transformation, the object of the digitalization process, and the subject of the electoral process. For example, according to economist Sh.D. Kudbiev, the object of digital transformation is socio-economic systems of any level that are reorganizing and changing their working format in the digital space and digital interactionⁱⁱ.

- First, if we consider the object of digitization of electoral processes, these are social relations in this direction and the elements they affect.
- The following are interpreted as the object of digitization of electoral processes:
 - - voter lists - electronic voter database, registration and verification processes;
 - - information about candidates - their electronic list, document submission and verification processes;
 - - voting process - electronic voting, biometric identification, automated voting systems;
 - - counting of voting results - electronic counting systems, automated verification and determination of results;
 - - announcement of results - online announcement of results, ensuring openness and transparency;
 - - security and authentication - cybersecurity, information protection, methods of identity verificationⁱⁱⁱ.

These elements are the main objects of the election digitization process and are of great importance for ensuring the legitimacy, transparency, accuracy and efficiency of the elections.

From a scientific and theoretical point of view, the object of the election digitization process is broader than the object of other types of social relations, reflecting the characteristics of two independent processes. First, these are elections, and secondly, the digitization process.

In this case, the election digitization process can be classified according to the nature of the object and according to other criteria. For example, objects with a dynamic and static nature are examples of this. Dynamic objects include relations that reflect a certain movement, process, that is, the voting process, counting results, ensuring information security at all stages of this process, etc. Static objects include electronic lists of voters, candidates and other information.

The subjects of the digitalization of electoral processes are individuals and legal entities that actively participate in the digital electoral system, who manage, control or participate in the process. Some researchers have expressed a separate opinion about the subjects of the electoral process. In particular, M. Istamov developed the following definition: “the subjects of the electoral process are persons who have the rights and obligations established by law to carry out or assist in the electoral process.”.

He also focused on the subjects of the election process and proposed to divide them into three groups (direct participants of the election process, organizers of the election process, persons assisting in the conduct of the election process).^{iv}.

Here, he focused only on the electoral process, not on the subjects of the process related to the digitalization of elections.

In our opinion, the subjects of the digitalization of electoral processes are broader than the above, and include the following:

Voters - citizens who have the right to vote, who vote electronically or in the traditional way.

The Central Election Commission (CEC) - organizes the electoral process, introduces digital technologies and exercises general control.

Regional and local election commissions - bodies responsible for conducting and supervising elections in certain regions.

Candidates and political parties - individuals and parties participating in the elections, who register and conduct campaigning through digital platforms.

Information technology (IT) specialists and programmers - specialists working on the digitalization of electoral processes, ensuring their security and stability.

Law enforcement agencies - organizations that ensure the legality of elections and exercise control in accordance with the law.

Observers (domestic and foreign) - individuals and international organizations that monitor the legitimacy, openness, transparency and impartiality of elections.

Mass media - television channels, websites, and other media resources that provide information about the election process to the population and the general public.

Civil society institutions are organizations engaged in monitoring electoral processes and supporting democratic processes.

Cybersecurity specialists are specialists with specialized knowledge and skills to ensure the security and protection of electronic electoral systems.^v

That is, the subjects of the digitalization of electoral processes are individuals and organizations that actively participate in the electoral process. They are engaged in organizing, managing, voting, monitoring or disseminating information.

In our opinion, the subjects of the digitalization of electoral processes can also be classified according to various criteria.

For example, according to the scope of their participation in the elections: main and auxiliary subjects. Also, according to the direction of activity: subjects responsible for the content of the elections or digitalization. Or, organizing or participating subjects, etc.

In general, the participation, responsibility, efficiency, and initiative of subjects in the digitalization of electoral processes are very important. Especially, taking into account the development of science and technology, the activities of subjects in the areas of information analysis, as well as cybersecurity, are of particular importance. Because digitalization also creates security and confidentiality problems. Therefore, cybersecurity measures are of great importance in the development of electronic electoral systems.

When commenting on research methods and methodology, it is worth noting that the scientific analysis of the digitization of electoral processes relies on the most general scientific methods, specific methods, and private-legal methods that apply to all disciplines.^{vi}

Also, modern research methods close to the topic, including legal analysis, blockchain and digital security ^{vii}, Legal Tech (law and technology)^{viii}, Legal

Chatbots (the use of artificial intelligence in providing legal advice)^{ix}, also used comparative legal methods.

Scientific analysis of priority areas for digitizing electoral processes is of great importance in identifying approaches aimed at increasing the efficiency and reliability of this process. The practical implementation of the results of scientific research in areas such as integration of various platforms, increasing the efficiency of systems, ensuring data security and transparency creates the basis for more transparent, fair and effective electoral processes.

“The scientific and methodological foundations of digitizing electoral processes are a complex and multifaceted issue, and their effective implementation requires in-depth scientific research and theoretical approaches. The scientific and methodological foundations in this process are aimed at ensuring the compatibility of technologies, legal norms and socio-political factors”^x.

In our opinion, the development of information technologies, integration of platforms, ensuring data security, harmonization with legal frameworks, and increasing public trust in this process are important in developing scientific foundations for the digitalization of electoral processes.

Also, the possibilities of using innovative technologies in the digitalization of electoral processes play an important role in methodological research. In particular, it is necessary to study the possibilities of using artificial intelligence, blockchain technologies, and other digital tools in electoral processes and increasing their effectiveness^{xi}.

In our opinion, when considering the methodology of digitizing electoral processes, it is appropriate to study digitization and electoral methodology separately, but also in a mutually complementary manner.

Turning to the methodology of digitization, it is the practice of describing and organizing data, objects, processes, or systems in a certain format or form, that is, through numbers. This methodology, as a rule, helps to quickly, accurately and efficiently store, process, and analyze information.

The main goal of the digitization process is to standardize data, organize them logically, and ensure their correct and accurate identification in social or economic networks^{xii}.

Just as any reforms and processes related to the life of the state and society are based on the results of certain scientific developments and the development methodology developed on their basis, the digitization of electoral processes also relies on a set of methods.

The main aspects of the methodology for digitizing electoral processes are as follows:

Standardization: at this stage, the objects of the electoral process or actions at the stages of the electoral process are systematized in accordance with established standards. For example, sorting voters by region, age, nationality, language, or identifying these procedures by numbers^{xiii}.

Identification: digitization in the electoral process ensures the precise identification of the object or process. For example, assigning a personal number (for example, an identification number) to each voter or candidate or a barcode to the campaign materials they use. **Data systematization:** digitization helps to organize data, which ensures easy processing and analysis of data later. For example, during the electoral process, data on voters who voted early are systematized by region, polling station. The possibility of using numerical, alphabetical, and chronological methods has been reflected in scientific studies^{xiv}.

Accuracy and reliability: The digitization process ensures that data is stored in an accurate and reliable form. The accuracy of each piece of information is very important in the electoral process. For example, information about a voter's residential address or telephone number. If this information is not accurate and reliable, there may be problems in delivering election-related messages to them^{xv}.

Analysis and reporting: various analyses and reports can be prepared based on the data obtained through digitization. For example, electronic, systematized data is very useful in preparing analytical materials on the results of past elections. They can

provide useful figures for studying several statistical bases and trends in certain periods.^{xvi}.

Automation: digitization methods help make data processing more efficient and faster through the use of computers and automation systems.^{xvii}. Election automation is the automatic implementation of some parts of the electoral process. For example, conducting elections, collecting votes, counting and recording results. The goal is to speed up the electoral process, reduce the likelihood of errors and minimize human intervention.

Digitization is widely used in economic, social, educational, management, economics and various fields, as well as in digital technologies. The digitization of electoral processes is a very important process among them.

Digitization of electoral processes means further optimization of the processes of organizing, conducting elections and calculating voting results through the use of modern information and communication technologies.

In the process of studying the theoretical foundations of the concept of digitization, it is important not to be limited to using single theoretical or practical principles, but to cover several different areas. They are of great importance in the implementation of electoral processes. Increasing the efficiency, accuracy and transparency of elections through digital technologies^{xviii}.

The practical use of digitization plays an important role in improving the quality of elections in a modern democratic society. These theoretical frameworks shed light on the importance of fully understanding the concept of digitalization of electoral processes and its implementation. They define the main directions in ensuring the efficiency, transparency and convenience of digitization processes.^{xix}

Another important theoretical basis of digitization is transparency^{xx}. Digitizing electoral processes makes the results transparent and reliable by storing data accurately, which strengthens citizens' trust in elections. Transparency is based primarily on the accuracy and ease of verification of data.

“Another theoretical basis of digitization is integration. The integration of digital technologies and platforms allows for the effective management of electoral

processes and the unification of data^{xxi}. This facilitates the integration of various digital systems and applications, facilitates the interoperability of data, and further increases the efficiency of interconnected processes. The theoretical foundations of integration mainly indicate the functioning of data exchange and additional benefit mechanisms.

“The fourth theoretical foundation of the digitalization process is convenience. Electronic voting systems and digital platforms facilitate the participation of voters in the electoral process^{xxii}. This speeds up the voting process, reduces queues, and ensures the accuracy and speed of data. The theoretical foundations of convenience primarily involve creating convenience for citizens and simplifying processes. “The digitization of electoral processes, the integration of modern information and communication technologies, provides the opportunity to effectively, quickly and reliably manage political processes^{xxiii}. These technological innovations optimize all stages of the election process, from voter registration to voting and announcement of results. The role and importance of digital technologies are mainly related to the efficiency, transparency and accuracy of the electoral process. Digital technologies allow the creation of automated systems for the electoral process, facilitate voter tracking, and quickly calculate the results. Electronic voting systems facilitate the voting process for voters, help it be carried out quickly and efficiently. These technologies help reduce the risk of illegality and errors in the elections, clarify the voting process, and quickly and reliably announce the results. “For example, electronic voting systems allow voters to cast their votes online, automatically calculate the results, and reduce the likelihood of errors.^{xxiv}”

Transparency and accuracy are the main advantages of digital technologies. The introduction of digital technologies in electoral processes ensures open and accurate communication of election results to the public. Accurate and precise storage of data through electronic systems facilitates the accuracy of election results and their verification. This, in turn, increases confidence in elections and ensures the transparency of democratic processes. The positive impact of digital technologies is

directly related to the mechanisms through which election results are calculated and their fair accuracy.

“The impact of digitalization on democratic processes, when viewed from a scientific point of view, is especially important in expanding political participation of society and increasing citizens' trust in electoral processes”^{xxv}. Through digital technologies, the management of electoral processes is facilitated, which helps to increase the efficiency of elections and the scope of political participation of citizens. Electronic registration systems, reducing the time and number of visits to vote, create convenience for voters. This helps to attract more people to the electoral process and ensure their active participation in the elections. The impact of digitalization on democratic processes is also related to monitoring the operation of electronic systems, data verification and protection from any manipulation. “At the same time, the impact of digitalization on democratic processes is related to the public’s access to digital technologies. The accuracy and convenience of digital services for all categories of voters helps to increase their participation in elections. Verifying elections through digital technologies helps not only to improve the efficiency of systems, but also to ensure the overall quality of democratic processes”^{xxvi}.

All of these are important factors in analyzing the impact of digitalization on democratic processes from a scientific point of view. The integration of digital technologies into electoral processes, while ensuring the efficiency, accuracy and transparency of elections, helps to increase the credibility and effectiveness of democratic processes.

The digitalization of electoral processes involves the use of modern information and communication technologies, electronic systems and new methods of data management. The methodological foundations of this process include methods used in scientific research, empirical research methods and approaches related to information security and confidentiality.

“In scientific research, the methodologies of digitalization of electoral processes include scientific methods, statistical modeling, technological analysis and information systems analysis”^{xxvii}. Information systems analysis allows for the

automation of election processes and effective data management. Electronic voting, voter registration and results calculation processes are carried out through information systems. Statistical modeling helps in forecasting and analyzing election results and identifying problems. Technological analysis aims to assess the effectiveness of digital technologies and determine their impact on electoral processes.

Through empirical research methods, it is possible to digitize, automate and evaluate the effectiveness of the electoral process using information technology, data analysis and modeling.

Information security is aimed at ensuring the protection of election systems from cyber attacks, the immutability and security of data. Ensuring data privacy means maintaining and protecting voters' personal data. Privacy and encryption methods ensure that data is protected from encryption and theft. Thus, the methodological foundations of the digitalization of electoral processes include methodologies used in scientific research, empirical research methods, and methodological approaches related to information security.

Studying the possibilities of new innovations and technologies in the digitalization of electoral processes and assessing their impact will help to implement electoral processes through more efficient and modified systems^{»xxviii}.

In our opinion, legislation and methodological interpretations on the digitalization of elections in Uzbekistan are of great importance in ensuring the efficiency and transparency of the electoral processes in the country.

While legislative documents determine the legal framework of digitalization, methodological interpretations cover the practical and technological aspects of digitalization, which, through their implementation, will make the electoral processes in Uzbekistan more accurate, fair and transparent. The national characteristics of the digitalization of electoral processes in Uzbekistan are being developed based on a methodological analysis in accordance with the political, economic and technological context of the country. This analysis is aimed at studying the specific aspects of the

digitalization of electoral processes in Uzbekistan, their practical implementation and analysis.

The conceptual foundations of digitalization of elections cover methodological approaches and technological integration. The conceptual foundations define the goals and objectives of digitalization of elections. These goals include obtaining election results quickly and accurately, protecting voter data and making the electoral processes transparent. Methodological approaches define the main methods and strategies for effective use of digital technologies^{xxix}.

Electronic election systems, automated data collection and analysis platforms, information security mechanisms, legal and standards, as well as education and training programs provide the technological integration of the digitization process and serve to increase the knowledge and skills of young researchers and specialists in the field of digital technologies and election digitization.

"Also, technical assistance and monitoring mechanisms play an important role in ensuring the efficiency and reliability of digitization systems. Monitoring mechanisms are used to ensure the transparency of election processes and verify the effective operation of the system."^{xxx}.

The scientific and methodological foundations of the digitalization of electoral processes are developed in accordance with the political, economic and technological conditions of Uzbekistan, as a result of which the efficiency, transparency and security of the processes are ensured.

If we pay attention to the surveys within the framework of the study, 61% of the public in Uzbekistan assessed the digitalization of electoral processes as a solution that meets the needs of the time, while 26.6% preferred to digitize only some of its aspects.

In our opinion, it is necessary to further develop scientific research and practical studies on the digitalization of electoral processes. Research will help to assess the efficiency of digitalization processes, the updating of technologies and methodologies^{xxxi}.

Conclusion

In general, the results of the methodological analysis show that a scientifically based approach to the digitization of electoral processes is necessary. It is also necessary to effectively use modern scientific methods in this process. Only then will digitization create an opportunity to increase the accuracy, impartiality, fairness, transparency and efficiency of elections, ensure legitimacy in this area, and realize the political rights of citizens. At the end of this paragraph, we draw the following scientific conclusion: firstly, it is important to clearly define the scope of the object and subjects of the digitization of electoral processes, since they are the most important system element in this process; secondly, it is necessary to rely on the most modern methods and methodologies in the digitization of electoral processes, since this will ensure the comprehensive perfection of the process, thereby creating convenience in organizing and conducting elections. In general, the digitization of electoral processes should be based on scientific achievements and the results of certain scientific developments.

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