

# Electronic and Internet Technologies in the Election Process

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## Abstract:

The rapid development of scientific, technical and technological developments has contributed to the transition of a large number of democratic countries to electronic political infrastructure and e-democracy tools, including the conduct of electronic elections and voting. Ukraine is no exception in which electronic and Internet technologies have a significant impact on policy relations; communication between politicians and citizens in the electoral process. Therefore, it is important to examine the impact and role of electronic and Internet technologies on Ukraine's electoral process, to compare it with the experience of foreign countries, and to analyze new opportunities for transforming the electoral process in Ukraine in line with democracy standards. The purpose of the paper is to investigate the place of electronic and Internet technologies in the electoral process, including the electoral process of Ukraine. The subject of the study is electronic and Internet technologies in the election process. As a result of the study of electronic and Internet technologies in the electoral process, we can conclude that the Internet and electronic technologies play an important role in modern electoral processes. Despite the adoption of the new Electoral Code of Ukraine, the electoral process in Ukraine needs quality changes and modernization. Besides, it is quite relevant for Ukraine to switch to electoral support with the latest information and communication technologies, since electronic and Internet technologies, if properly used, can ensure the electoral process is democratic and to improve the functioning of institutions of representative democracy in general.

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## I. INTRODUCTION

The electoral process in Ukraine is a complex political and legal phenomenon that includes the election campaign (political aspect) and the statutory set of stages and election procedures that ensure its integrity and legitimacy of the election results.

At present, among the unresolved issues of the electoral process is the influence of the rapid development of electronic and Internet technologies, on the modern political communication between citizens and the authorities. Therefore, it is important to analyze the role of electronic and Internet technology in the electoral process in modern Ukraine.

The scope of electronic and Internet technologies

in politics is expanding every day. For example, a politician or voter can use modern computers, special computer databases, the Internet system to collect, obtain and process the necessary political information. At the same time, Internet technologies make it possible to use the principle of dialog communication, which creates new opportunities for participation in political and information exchange.

As Ukraine is on the path of democratization, not only the society as a whole but all its institutions, require change. When it comes to the electoral process, it is envisaged the widespread use of modern information technologies and standardization of mechanisms during its conduct.

The transition of countries to the use of new technologies requires a full-scale reform of the legal

system based on the principles, standards, and capabilities emerging at the global level. This also poses new challenges to electoral law professionals.

In addition, from a practical point of view, given the democratic transformations and the rapid development of technology in society, suffrage requires a focus on the implementation of existing institutions using modern mechanisms and developments. The introduction of information technology into the national electoral process should be based on the best legal experience of the leading states in the context of both progressive expression and protection of the results of the will during electronic voting (Stromayer, 2008).

In view of the above, it is important to investigate electronic and Internet technologies in the election process of Ukraine, to analyze the provisions of the legislation governing their application in Ukraine and to examine theoretical developments in the investigated issue.

## II. METHODOLOGY

To achieve the purpose of this article such methods as dialectical, historical, generalization, structural-functional, behavioral, comparative, formal-logical were used.

Among them, dialectical and historical methods are used to study the development of electronic and Internet technologies in the electoral process. Formal-logical and system-structural methods are used in the process of formulating proposals and changes to the current legislation on securing the place of Internet technologies in the election process. The systematic approach facilitated, on the one hand, the elucidation of the general signs of the impact of electronic and Internet technologies on the course and outcome of election campaigns, and on the other, the disclosure of the specifics of the use of Internet communications during the elections of People's Deputies and the President of Ukraine.

The application of methods of generalization, analysis, and synthesis made it possible to improve the content of the concepts of "political communication", "Internet communication",

"political participation", "electoral participation", "electoral management" and "electoral marketing". Structural and functional analysis was used in the study of the peculiarities of the use of Internet communications by various actors of the electoral process at all stages. The comparative method has become an important tool in revealing the impact of Internet communications on the democratization of electoral participation in the process of comparing the course of parliamentary and presidential election campaigns. Also, the study used special methods, such as behavioral methods – to study the behavior of voters and other actors of electoral processes, and content analysis method – to work on the systematization of materials contained in the accounts of different political forces.

Besides, it is necessary to distinguish the legal acts and programs of the Government, which stipulate the provisions on the electoral process in Ukraine, as well as the provisions on the use of electronic and Internet communications in the electoral process. Among them are the following:

1. The Constitution of Ukraine (2016).
2. Electoral Code of Ukraine (2019).
3. On electronic trust services: Law of Ukraine No. 2155-VIII of October 5, 2017.
4. On Approval of the Concept of Development of E-Governance in Ukraine: Order of the Cabinet of Ministers of Ukraine of September 20, 2017, No. 649-p. (2017).
5. On Approval of the Concept of Development of Electronic Democracy in Ukraine and the Plan of Measures for its Implementation: Decree of the Cabinet of Ministers of Ukraine of November 8, 2017, No. 797-r. (2017).

## III. ANALYSIS OF RECENT RESEARCH

Electronic and Internet technologies in the election process were researched by such scientists as Akopov (2012), Andreeva (2015), Bereza (2010), Bytyak (2015), Vishnyakov, Prygara, and Voronin (2014), Gotun (2008), Diamond, and Plattner (2004), Denisyuk (2012), Kaminskaya, Kaminsky, Pasichnyk, Seleshchuk, Gavrilets, Kyrylyuk,

Mazhak, Yakimenko, Bekirova, and Esipenko (2008), Ivanov (2002), Efremov (2002), Kohalyk (2015), Malinovska (2016), Mykhalchuk (2016), Onipko (2006), Sidenko (2012), Turchin (2013), Shevereva (2016), Yurchenko (2008), Melendez (2018), Sandre (2018).

Thus, Akopov (2012) studied political Internet communications as an innovative factor in modern political processes. Moreover, Bereza (2010) analyzed current voting technologies. Bytyak (2015) examined the legal provisions governing public relations related to the use of the Internet. In addition, Vishnyakov, Prygara, and Voronin (2014) analyzed the open secret ballot system and drew attention to the features of the secret ballot system. The subject of Gotun's (2008) research was the use of new information technologies in the electoral process. Furthermore, Denysyuk (2012) also dealt with the same issue.

At the same time, Mikhalchuk (2016) drew attention to electronic tools of public control of the election process in Ukraine. Onipko (2006), in his works, sought ways to improve the technology of the electoral process. The subject of Sidenko's (2012) research is the introduction of electronic voting in Ukraine, including an analysis of the prospects for implementing such voting. Besides, Shevereva (2016) conducted a comprehensive analysis of the use of the Internet during the election process. Also, Yurchenko (2008) explored the peculiarities of using the Internet in the election campaign.

In addition, Diamond and Plattner (2004) were exploring tools for a global revival of democracy. Also, Efremov examined information as an object of civil rights. Melendez (2018) and Sandre (2018) explored the use of blockchain technology in the electoral process.

Furthermore, Andreeva (2015) conducted a detailed analysis of e-government in the United States, including drawing attention to the peculiarities of using Internet technologies in solving matters of state importance. Kaminskaya, Kaminsky, Pasichnyk, Seleshchuk, Gavrilets, Kyrylyuk, Mazhak, Yakimenko, Bekirova, and Esipenko

(2008) explored foreign experience in implementing e-government. Ivanov researched political Internet PR in Russian realities. Kohalyk (2015) also analyzed the world experience of implementing Internet technologies in the electoral process. Moreover, Malinovska (2016) analyzed the foreign experience of exercising citizens' suffrage abroad and the possibility of its application in Ukraine. Turchin (2013) explored the world's experience in implementing the conceptual basis of electronic voting.

Thus, from the analysis of the literature, it can be concluded that electronic and Internet technologies are being actively researched among Ukrainian and foreign scientists, but there is no comprehensive study of electronic and Internet technologies. This fact necessitates the study of electronic and Internet technologies in the electoral process.

#### IV. RESULTS

The Electoral Code of Ukraine No. 396-IX of December 19, 2019, provides for the use of electronic and Internet technologies in several provisions. Thus, according to Art. 50 of the Election Code of Ukraine, news agencies, mass media, in the event of dissemination of election-related opinion polls, are required to indicate the full name of the poll organization, the pollsters, and other information. The provisions of this section apply to cases where the media, election agencies, disseminate election-related opinion polls on the Internet. It also states in the Transitional Provisions that the Registry Manager ensures the interaction of voters with the Register through the introduction of electronic services on the Internet, and states that applications from individuals can be submitted online and the requirements for such applications are stated. Regarding electronic technologies, it is evident from the provisions of the Election Code of Ukraine that, to organize and ensure democratic elections, registers, and other means have been introduced which summarize information about candidates and voters (Electoral Code of Ukraine No. 396-IX of December 19, 2019).

The Cabinet of Ministers of Ukraine has approved the Concept of Development of e-Government in Ukraine (On Approval of the Concept of Development of Electronic Democracy in Ukraine and the Plan of Measures for its Implementation..., 2017). The implementation of the Concept will allow to increase the efficiency of work of state and local self-government bodies and to reach a new level of government, based on the principles of efficiency, transparency, openness, accessibility, trust, and accountability; to improve the quality of public service provision to individuals and legal entities following European requirements, to minimize corruption risks in the exercise of power, etc. (On Approval of the Concept of Development of E-Governance in Ukraine..., 2017)

In addition, Ukraine has made significant strides in implementing the electronic electoral process. In this context, we can distinguish:

1. Use of biometric passports of Ukrainian citizens, as well as internal passports in the form of ID-cards, which can be used in the future to identify voters during electronic voting;
2. Use of electronic digital signature, which may also be required when introducing voting;
3. Use of a service that allows checking its presence in the electoral lists online - through a special service on the website of the State Voter Register;
4. The transition of the Central Election Commission (hereinafter – the CEC) to procurement through the PROZORRO electronic system and gradual electrification of the CEC activities. Besides, the CEC operates a piece of single information and analytical system, Elections, which covers all stages of the election process.

With the adoption of the Law of Ukraine "On Electronic Trust Services", new electronic services for citizens have been introduced, which facilitate the exchange of electronic documents between citizens (On electronic trust services..., 2017).

Unfortunately, there are no specific provisions governing the use of electronic and Internet technologies in Ukraine's election process. This indicates that in Ukraine there is no proper

regulation of the use of electronic and Internet technologies in the electoral process, which necessitates the analysis of the theoretical positions of scientists on the subject under study.

Currently, some scholars are exploring the prospects of implementing blockchain technologies in the electoral process. Generally, blockchain can be considered as a distributed database that stores information about every transaction made on the system (Sandre, 2018). The data is stored as a chain of blocks with transaction records. The data cannot be tampered with, as each new entry validates in existing chains. To fake data, you need to change the information in all other blocks. At the same time, since the system is distributed, the actual information about the records in the system is stored by all its members and automatically updated when any changes are made. Scientists believe its use will provide transparency and multiplicity of copying on different servers, and therefore, there is a real opportunity to detect any fraud in this system. This can be successfully applied to the Institute of suffrage. The use of blockchain technology, according to some scholars, will help ensure that transparency in elections is automatic. In connection with this, it is proposed that the researchers introduce electronic voting using identification documents that have electronic media of biometric information. Blockchain voting can eliminate both the technical problems of electronic voting and help keep the secrecy of the vote. The positive effects of the use of electronic voting include, first of all, the following:

- the increase in the speed of vote counting;
- budgetary savings;
- reduction of opportunities for pressure on voters during the will;
- protection against deliberate forgery and falsification of voting results;
- significant increase in the level of citizens' involvement in elections;
- the possibility of holding elections in conditions of political and social instability;
- creating convenient conditions for voting;



the ability to use information systems and software for other public spheres.

At the same time, the potential risks and disadvantages of using the electronic voting mechanism should be addressed: vulnerability of computer systems (viruses, hackers, etc.); distrust of a large part of the population in electronic voting technology; the possibility of manipulation and unauthorized interference with the results of the will; the inability to obtain evidence of an offense in the event of suspected fraud and, accordingly, effectively challenge the offense; significant cost of technology in the implementation phase; inaccessibility of the Internet for a large part of the population (Internet audience research, 2019); the lack or low level of computer literacy of certain categories of citizens; widening the "digital divide" of society. Regarding e-voting, scientists distinguish such criteria as: accessibility (ease of use and clear algorithm of action); accuracy (the voice must be transmitted to the central network without being deleted or altered); democracy (no discrimination on the basis of sex, race, financial status, physical capacity, etc.); secrecy (neither the system nor the authorized persons can associate a voice with a specific person); verification (possibility of open check of correct calculation).

Foreign experience of using electronic technologies in voting should be analyzed.

In general, electronic voting in national elections was first used by Estonia. It is also allowed by Iraq, the Netherlands, New Zealand, Singapore, and France. In test mode, it has been used in the UK, US, and Switzerland. This method of voting is not yet widespread for technical reasons, because of the need to use special technologies to identify the voter, and also because of doubts about the ability to keep the ballot secret.

For example, in France, online voting is used for nationals abroad, and so that such persons do not have to appear at the polling station to vote. Interesting experience in the development of electronic elections in the United States, where a variety of experiments were conducted - from the

use of sensing machines for voting or scanning electronic means, and to the use of special optical complexes. However, the most successful in the electronic voting system is the experience of Estonia, which is based on the electronic voting system, which is based on the use of the Internet, as well as a special identification card that identifies the voter. Yes, the experience of Estonia testifies to the growing trust of citizens in this method of voting, the number of voters who cast their ballots on the local elections has increased. Also noteworthy is the electronic voting during the Sierra Leone presidential election, where the Red Cross, Lausanne Technical High School, and the University of Freiburg were the operators of the registry, besides, anyone who could watch the process worked in read-only mode (Sierra Leone hosted the world's first presidential election using blockchain technology, 2018).

In general, in the world practice, such types of electronic voting are distinguished as:

- voting at a polling station using an electronic system;
- voting through optical scanning;
- voting with punched cards;
- remote voting and electronic direct election electoral system.

Thus, during the voting at the polling station with the help of an electronic system, the voter registers his ID card in a special reader, enters his password on the voting site, receives an electronic ballot and reflects his choice. Such ballot boxes will automatically count votes when voting is complete.

When voting by optical scanning – the voter selects the candidate by marking on a special ballot, which is then processed by the election machine, which through optical means calculates votes at the polling station.

Voting with perforated cards means that the voter uses special cards that are read by the computer and marks the candidate with a special code that remains on the punch card. The voter then lowers the punch card to the ballot box, which, in turn, automatically calculates it.

The direct-entry electronic election system allows the voter to select a candidate on a computer touch screen, after which the machine counts the votes using a special program. Identification is by fingerprint or ID card.

During the remote voting, the voter selects the candidate through the software on the Internet. This is most often done by sending a special email to a polling station or voting on a specially created site. The voice enrollment process only happens after preliminary identification.

Given the analysis of Ukrainian and foreign legislation to implement electronic and Internet technologies and the introduction of electronic voting in the election process of Ukraine, there is a need to develop an algorithm for the implementation of such innovations. Therefore, all automated electronic voting systems must be independently tested and certified by international observers and information technology experts. The Central Election Commission and district commissions should train and instruct polling station staff on the use of electronic election systems. Also, it is necessary to carry out a state campaign to inform citizens about the peculiarities of the use of electronic voting through social advertising and the publication of educational materials. It is very important to maintain citizens' confidence in the

electoral process, including the fairness of using the electronic voting system. The introduction of such a voting system, while costly in the first stage, will save a considerable amount of money in the future by reducing the number of election workers involved and printing costs.

However, there are risks involved in the use of electronic voting systems, including hacking, viruses, problems with citizen identification, violation of voting secrets, and malfunctions during the counting. However, all this can be offset by careful testing of electronic systems, proper training of election commission members, and involvement in non-governmental organizations monitoring.

## V. DISCUSSION

As a result of the study, the role and prospects of electronic and Internet technologies in the electoral process have been clarified, including the benefits of introducing electronic voting in Ukraine. The current legislation of Ukraine does not yet provide for electronic voting, but the foreign experience of democratic states in electronic elections should be the basis for the development and adoption of legislation aimed at the development of electronic elections and the electoral process.

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### Advantages of Electronic Voting in Ukraine

the opportunity to vote remotely, significantly reduces the risk of pressure to vote and increases the reliability of the choice and possibility to vote for several days at a convenient time for the voter;

an increase in the number of young voters who are ready to participate in elections using information technology;

the voting procedure is more convenient for people with disabilities and the fact that the vote count is more accurate and faster;

the counting of votes can be watched in real time.

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### Disadvantages of Electronic Voting in Ukraine

the electorate lacks access to the Internet;

e-voting system is difficult for older Ukrainians due to lack of knowledge and skills needed for e-voting;

the risk of data leakage and violation of the right to secrecy of the ballot, as well as the transparency and reliability of technological solutions in electronic voting, remain;

there is a risk of hacking attacks.

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The conducted research has shown that the electoral process in Ukraine needs significant

changes and modernization. The use of electronic and Internet technologies in the electoral process

helps to ensure the democratic electoral process and to increase the efficiency of the institutions of representative democracy and to establish a dialogue between the authorities and society. Besides, the use of Internet technologies in the electoral process is consistent with the logic of the information society and the basic principles of e-democracy and e-governance. Therefore, in the light of globalization processes and technology development, it is necessary to harmonize legislation to use the latest global trends and to carry out further analysis of potential electronic and Internet technologies, but also provide suggestions on the content of such technologies

## CONCLUSIONS

1. Thus, electronic and Internet technologies play an important role in the suffrage institution. The experience of different countries confirms that the use of Internet technologies is an effective tool for democracy, but each technology has both positive and negative features.

2. Some of the advantages of using the latest technologies in the electoral process are to ensure the accessibility and simplicity of voting and public or other control procedures, to save public money, to prevent violations, to use standard computer equipment, to allow citizens to vote outside their precincts.

3. The disadvantages of the introduction of electronic and Internet technologies are insufficient guarantees of protection of information of citizens and the possibility of technical mistakes.

4. However, despite the shortcomings, the use of electronic and Internet technologies is necessary to modernize the election institute, increase the level of trust between states and citizens, and ensure the speed of the process and simplify the election process

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