USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES IN THE ELECTION PROCESS: UKRAINIAN REALITIES AND FOREIGN EXPERIENCE

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ABSTRACT

The features of the use of information and communication technologies in the election process have been examined in the article. In particular, the essence and features of electronic voting as a promising direction of modern information and communication technologies are determined. The foreign experience of using information and communication technologies is studied, namely, the normative-legal and organizational components of application of electronic voting and electronic counting of votes are determined. Based on the results of studying the experience of introducing e-voting on the example of the USA, Estonia, Switzerland, Germany, and Ireland, it has been concluded that it had not only positive consequences but also a negative result. Among the countries considered, in which electronic voting is currently used in elections, it has been found that Estonia has achieved the greatest success in this area, and which not only has a secure and reliable e-voting system but also a nationally mandated body, the National Electoral Committee, to manage the online voting system to ensure trust in the system. It has been found that in Ukraine the use of electronic voting in the election process is only at the stage of active discussion, experience in the use of this latest technology in the country is still lacking, and therefore its introduction remains an urgent need.

Keywords: Information and Communication Technologies, Electronic Voting, Election, Electorate, Election Process.

INTRODUCTION

In recent years, there has been an increase in the introduction of electronic voting in electoral processes, as a promising area of modern information and communication technologies (ICT). The introduction of the latest ICTs in the electoral process in today's conditions aims to increase the level of public confidence in a country to the election results. It should be noted that data security, prevention of election fraud, and secrecy of electoral preferences are important for the security of every citizen in particular and society in general, as well as for state security (Reznik et al., 2020). Therefore, the introduction and application of modern ICT in the electoral process require significant efforts to modernize e-voting systems in accordance with new modern

requirements, to ensure their security and reliability, as the latest digital solutions for elections must comply with the principles applicable to democratic elections.

To date, the introduction of electronic voting in the election process is due to a number of factors, among which important ones are saving money on the election process, reducing the level of fraud during the election, improving the accuracy and speed of counting votes, increasing the level of accessibility for voters with disabilities and those who are abroad, etc. In addition, the need to introduce electronic voting in the electoral process is explained by the fact that it is one of the effective mechanisms for combating corruption as a global problem, and thus overcoming corruption in the public sphere (Reznik et al., 2019). It should be emphasized that ICTs are improving rapidly and their introduction into the electoral process is no exception. However, it is important to keep in mind that the success of the introduction of electronic voting in the electoral process largely depends on the human factor, namely the perception and attitude of the citizens of the country. In view of the above, the study of the peculiarities of electronic voting in the election process, and, in particular, the legal basis for its use in this area, is considered relevant.

LITERATURE REVIEW

In modern conditions, the use of ICT in the electoral process is better known as electronic voting, so it is necessary to determine its essence and features. Haibo (2019) defines electronic voting as an electronic means of submitting and counting votes. The researcher notes that this is an efficient and cost-effective way of conducting a voting procedure, which is characterized by large data and real time and requires high security. Germann & Serdült (2014) argue that e-voting during elections is particularly attractive to citizens who cannot vote at a polling station. These include people with disabilities, the elderly, those living in remote areas, citizens living abroad (emigrants), for whom it saves the return time associated with postal services. Quite interesting is the position of Beaulieu (2016), who conducted a study of the peculiarities of electronic voting and voters' perception of fraud and fairness in elections. The author concludes that far fewer people are concerned about election fraud conducted by electronic voting than other potential forms of electoral fraud, such as registration of voters who do not have the right to vote, or suppression of voters.

It is important to emphasize that the term "*electronic voting*" has a legislative definition in an international legal document, namely in Recommendation CM/Rec (Council of Europe, 2017) 5 of the Committee of Ministers to member States on standards for e-voting, 2017, under which means the use of electronic means for submitting and / or counting votes (Tvaronavičienė et al., 2020).

Historically, the main threat to the national security of the state was the armed conflict, which has always been provoked by the states themselves. Therefore, the concept of «security» is often understood as control of military threats. However, the situation changed in the 21st century. Threats ceased to be limited to only military threats. The financial crisis, terrorism, proliferation of nuclear, chemical weapons, ethnic conflicts, organized crime, epidemics, overpopulation, and climate change and so on began to aspect the status of national security. All countries in the world are upon pain of every day, therefore there is a growing awareness that it can only be saved through the cooperation of states, international organizations, communities, etc.

METHODOLOGY

The study of the peculiarities of the use of information and communication technologies in the electoral process was carried out using historical, dialectical, formal-legal, and system-structural methods. Thus, the historical method was used to highlight the historical aspects of the introduction of electronic voting in the electoral process in countries such as the United States and Estonia. The dialectical method was used to establish the essence and features of electronic voting as a promising area of modern ICT. The formal-legal method allowed establishing an international legal framework, which regulates the use of ICT in the electoral process, namely the use of electronic voting and counting. Using the system-structural method, the main steps for the introduction of electronic voting in the election process in Ukraine have been identified.

FINDINGS AND DISCUSSIONS

The study of the peculiarities of the use of ICT in the electoral process primarily requires the study of foreign experience in this area, namely the definition of the so-called legal and organizational components of the use of electronic voting and electronic counting.

The legal framework governing the use of ICT in the electoral process, namely the use of electronic voting and counting, is the Recommendations of the Council of Europe. The first such a document was Recommendation Rec (Council of Europe, 2004)15 of the Committee of Ministers to member states on electronic governance (e-governance), which recommended that Member States consider voting in elections and referendums at all levels of government except traditional non-electronic voting channels (Council of Europe, 2004). In 2017, Recommendation Rec (2004) 15 was replaced by Recommendation CM/Rec (Council of Europe, 2017) 5 of the Committee of Ministers to member States on standards for e-voting. The Annex to Recommendation CM/Rec 5 sets out 49 standards, which are applicable to all types of electronic voting and electronic counting of votes (Council of Europe, 2017).

When defining the legal framework for regulating the use of ICT in the electoral process, it should also be emphasized that there are other legal documents that, although not directly related to elections, are important for the application of modern digital technologies. In particular, we are talking about the 2001 Convention on Cybercrime (also known as the Budapest Convention on Cybercrime). At its 8th plenary session in December 2012, the Cybercrime Convention Committee (T-CY) decided to publish Guidance Notes aimed at promoting the effective use and implementation of the Budapest Convention on Cybercrime, in the light of legal, political, and technological developments. T-CY Guidance Note#9, entitled Aspects of election interference by means of computer systems covered by the Budapest Convention, states that interfering in elections through malicious cyber activities against computers and data used in elections and election campaigns, undermines free, fair, and pure elections and confidence in democracy. Therefore, it is necessary to make computer systems used in elections and related campaigns more secure (Council of Europe, 2019).

Examining the organizational component of the use of electronic voting and electronic counting of votes, i.e. the practical implementation of the normative principles of the use of ICT in the electoral process, it is important to note that the intergovernmental organization The International Institute for Democracy and Electoral Assistance (International IDEA), whose mission is to promote and develop sustainable democracy around the world, operates at the

international level. International IDEA, founded in 1995, has a global membership that is independent of specific national interests. The organization is governed by its Charter, which entered into force in November 2008. Membership in the International IDEA is open to governments that demonstrate, by example in their own country, their commitment to the rule of law, human rights, the fundamental principles of democratic pluralism, and the strengthening of democracy. International IDEA operates at the international, regional, and national levels, working in partnership with a number of institutions.

International IDEA is an active partner in a number of joint projects that support the exchange of knowledge on best practices and practical advice, as well as capacity building of election practitioners and politicians. One of these projects is the ACE Electoral Knowledge Network (ACE), founded in 1998. The main goal of the project is to provide election commissions, election experts, and stakeholders with all the necessary information to increase transparency and confidence in the election process. ACE provides a variety of up-to-date election-related information and documentation on more than 200 countries and territories from which Ukraine is no exception.

If we go back to the historical origins of the introduction of innovative technologies in the electoral process, the first experiment on online voting was conducted during the 2000 presidential primaries in the United States in Arizona. Voters were allowed to vote online, but this was challenged in court because unequal access by Arizona residents would unfairly tilt election conditions for those with computers and modems at home (White, 2000). In the same year, voters in Oregon (USA) participated in the election, where voting was allowed only by mail, reached 80% (Litan, 2001). Under the Help America Vote Act of 2002, the Election Assistance Commission (EAC) was established, which is empowered to adopt guidelines for voluntary voting, accreditation of voting laboratories, and certification of electronic voting and counting systems (Help America vote act, 2002). As early as 2005, the EAC developed the Voluntary Voting System Guidelines (VVSG) to accredit the functionality, accessibility, and security requirements of electronic voting and counting systems. The VVSG contains approximately 1,200 requirements that systems must meet in order to receive EAC certification.

The experience of Estonia, which is characterized by the success of the introduction of electronic voting in the electoral process, seems to be quite positive in the use of ICT in the electoral process. It is important to note that in 2005 Estonia became the first country in the world to hold national elections using the electronic voting method. Since 2011, citizens have been given the same chances to use electronic voting: for both young and elderly people, for the educated and less educated, literate in the use of PCs, and others. Empirical evidence in the Estonian case has also confirmed that e-voting significantly reduces the cost of participation and is particularly desirable for people living away from polling stations (European Union, 2016).

A special body, the National Electoral Committee, has been set up at the state level to manage the Internet voting system and ensure trust in the system. In Estonia, the electronic voting system in the election process is as follows. During the specified period before voting, the voter enters the system using an ID-card or Mobile-ID and conducts voting. The voter's identity is removed from the ballot paper before it reaches the National Election Commission for the counting of votes, thus ensuring anonymity. Estonia's decision was to allow voters to log in and vote as many times as they wanted during the pre-voting period. Because each vote cancels the last one, the voter always has the opportunity to change his vote later. It is important to note that Estonia has a separate website that contains a large amount of information on e-voting, in

particular, the introduction to e-voting, its system, principles, comparison of e-voting and paper voting, how to use it for people who are abroad, the practice of electronic voting, results, observations, etc. In addition, the site contains up-to-date statistics on e-voting in Estonia, which contains many comparative tables with data on the number of voters who used e-voting, by gender, age, district, day, etc.

In Switzerland, as part of the Vote électronique strategic project, the E-Voting electronic voting system has also been introduced. In Switzerland, the e-voting system allows voters to vote online via smartphone, tablet, or computer anywhere, anytime. This is done by sending voters a security code by mail together with their election documents, which they then use to log in to their canton's e-voting platform. They can now cast a single vote, which is then stored, encrypted, and anonymous in the e-mail box. Only the cantonal election commission can open the ballot box and decipher and count the votes. End-to-end encryption ensures that digital "*envelopes with answers*" cannot be opened or read from the moment of voting on the voter's device until the moment of opening the ballot box by the cantonal election commission (Online voting in Switzerland - E-voting).

However, while in some countries the introduction of e-voting in the election process has been positive, there is some where it has not been so successful. Studying the use of ICT in the electoral process in Germany, it should be noted that this country piloted its first electronic voting machines, supplied by the Dutch company NEDAP, in Cologne in 1998. This practice was considered successful, and year later Cologne used electronic voting machines throughout its European elections. Other cities soon followed suit, and by the 2005 general election, nearly 2 million German voters had used these NEDAP machines to vote. However, after the 2005 election, two voters filed a lawsuit with the German Constitutional Court after unsuccessfully lodging a complaint with the Election Control Committee. The case argued that the use of electronic voting machines was unconstitutional and that voting machines could be broken into, so the results of the 2005 elections could not be trusted. In 2009, the Constitutional Court declared the federal decree on voting machines invalid and the use of electronic voting machines in the 2005 elections unconstitutional (Law, 2005). The introduction of ICT in the electoral process in Ireland has also failed. In 2002, the country spent about € 54 million on electronic voting machines but concerns about their propensity to falsify and the lack of a paper trail meant that they were never used. To date, the views of the Irish on the introduction of electronic voting are divided. According to a survey by Claire Byrne Live/TheJournal.ie conducted by Amarách Research, less than half of people are in favour of switching to electronic voting, and a significant proportion is against it (Duffy, 2019).

In Ukraine, the main legal document regulating the basic principles of the election process is the Electoral Code of Ukraine 2019. The term "electronic voting" is not used by the Ukrainian legislator. Instead, Article 18 of this Code defines the principles of using innovative technologies in the election process. In particular, it is noted that the Central Election Commission may decide to introduce innovative technologies, hardware and software during the organization and conduct of elections in the form of an experiment or pilot project on: (1) voting at the polling station with hardware and software (machine voting); (2) counting of votes with the help of technical means for electronic counting of votes; (3) drawing up protocols on the counting of votes and results of voting using the information-analytical system (Legislation, 2019).

RECOMMENDATIONS

In Ukraine, the use of electronic voting in the election process is only at the stage of active discussion. However, in the current rapid development of ICT, the introduction of electronic voting in Ukraine is an urgent need. At the same time, the introduction of electronic voting in the election process requires considered and serious steps, among which it is expedient to highlight the following:

1. Creation of an effective legal framework to ensure this process;
2. Creation of an extensive electronic infrastructure with the possibility of using new informative and automated electronic technologies in the election process;
3. Installation of certified software;
4. Conducting training of citizens on the use of electronic voting during elections;
5. Preparation of election bodies for the use of ICT in the election process, etc.

In addition, it would be useful to learn from the positive experience of foreign countries, in particular, Estonia, Switzerland, etc., to develop a special web resource that makes e-voting in elections more understandable and accessible to ordinary citizens.

CONCLUSION

A study of the use of ICT in the electoral process in foreign countries, in particular, in the United States, Estonia, Switzerland, Germany, and Ireland, shows that the introduction of e-voting had not only positive consequences but also a negative result. Among the countries where e-voting is currently used in elections, Estonia has been the most successful. An important step in this direction was the decision to establish a special body at the state level-the National Electoral Committee, to manage the Internet voting system to ensure confidence in the system. Despite the positive experience of introducing e-voting in Estonia, Switzerland, the USA, for example, in Germany and Ireland, such innovations in the production process were a failure, and only incurred large financial costs. Experience of using electronic voting in the electoral process as one of the promising areas of modern ICT in Ukraine is still lacking. Therefore, the need to exchange experience with the election authorities of foreign countries and international organizations in the context of organizing the election process using the latest ICT (electronic voting) remains an urgent issue.

REFERENCES

Beaulieu, E. (2016). Electronic voting and perceptions of election fraud and fairness. *Journal of Experimental Political Science, 3*(1), 18-31.

Council of Europe. (2004). *Committee of Ministers: Recommendation rec 15 of the committee of ministers to member states on electronic governance ("e-governance")*. Retrieved from https://www.coe.int/t/dgap/goodgovernance/Activities/Key-Texts/Recommendations/00Rec_2004_15e-gov_en.asp

Council of Europe. (2017). *Recommendation CM/Rec: 5 of the Committee of Ministers to member States on standards for e-voting*. Retrieved from https://search.coe.int/cm/Pages/result_details.aspx?ObjectID=0900001680726f6f

Council of Europe. (2019). Cybercrime convention committee: *T-CY Guidance Note #9 Aspects of election interference by means of computer systems covered by the Budapest Convention.* Retrieved from https://rm.coe.int/t-cy-2019-4-guidance-note-election-interference/1680965e23

Duffy, R. (2019). *Irish people are split over whether we should have another go at e-voting.* Retrieved from https://www.thejournal.ie/e-voting-machines-ireland-4663406-Jun2019/

European Union. (2016). Potential and Challenges of e-voting in the European Union. *Directorate general for Internal Policies policy Department C: Citizens' rights and constitutional affairs.* Retrieved from https://www.europarl.europa.eu/RegData/etudes/STUD/2016/556948/IPOL_STU%282016%29556948_EN.pdf

Germann, M., & Serdült, U. (2014). Internet voting for expatriates: The Swiss case. *E-Democracy Open Government, 6*(2), 197-215.

Haibo, Y. (2019). Securing e-voting based on blockchain in P2P network. *EURASIP Journal on Wireless Communications and Networking, 137*(1), 1-9.

Help America Vote Act. (2002). Retrieved from https://www.justice.gov/crt/help-america-vote-act-2002.

Law. (2005). *German court rules e-voting unconstitutional.* Retrieved from https://www.dw.com/en/german-court-rules-e-voting-unconstitutional/a-4069101

Legislation. (2019). *Electoral Code of Ukraine.* Retrieved from https://zakon.rada.gov.ua/laws/show/396-20#Text

Litan, R.E. (2001). Law and policy in the age of the internet. *50 Duke Law Journal, 50*(4), 1045-1085.

Online voting in switzerland – e-voting. Retrieved from https://www.evoting.ch/en

Reznik, O., Getmanets, O., Kovalchuk, A., Nastyuk, V., & Andriichenko, N. (2020). Financial security of the state. *Journal of Security and Sustainability Issues, 9*(3), 843-852.

Reznik, O., Shendryk, V., Zapototska, O., Popovich, E., & Pochtovyi, M. (2019). The features of e-declaration as an effective tool to prevent corruption. *Journal of Legal, Ethical and Regulatory Issues, 22*(2), 1-6.

Tvaronavičienė, M., Plėta, T., Della Casa, S., & Latvys, J. (2020). Cyber security management of critical energy infrastructure in national cybersecurity strategies: cases of USA, UK, France, Estonia and Lithuania. *Insights into Regional Development, 2*(4), 802-813.

White, B. (2000). *Online balloting: A question of fairness: Washington Post*. Retrieved from https://www.washingtonpost.com/archive/politics/2000/03/19/online-balloting-a-question-of-fairness/bb0af300-c40b-4db0-8f52-e8c4dc9c6826/