

E-Democracy Implementation in the Process of Stimulating the Country Socio-Economic and Socio-Political Development

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Abstract

University library acting an important role in preparing future qualified specialists in various fields by providing them with the necessary informational resources. This paper is focused on its processes. Modern development of automation of library processes in University quite rapidly passes. Implementation of computer and telecommunication technologies in the work of libraries is no longer fashion, but an urgent requirement to improve productivity and quality of library and information services through the creation, usage and integration of electronic resources and the automation of library processes. Created electronic catalogs and arrays of digital documents together with the means of telecommunication are necessary for the fulfillment of the main task is providing users' access to different types of informational resources of libraries at minimum total cost. Acquisition and organizational processes of university library differ from other types of libraries through the connection with the educational process. Informatization performances a huge role in library functioning. Introduction of new systems, including web-oriented library system, such as Koha, helps to provide quality services to the library users, and in a co-pandemic period provide these services remotely. And the statistics presented in the publication confirm this. To solve the current problems completing the library fund is a constant exchange of data between different structural units of high school: teaching management, scientific research department, department, institutes, departments, etc. Relevance of data in such an exchange is quite low, as in the best-case data is updated twice a year, and human resources that are responsible for status of this information is quite large. The library and the appropriate University departments are interested in obtaining relevant data in an automated mode.

Keywords 1

University, library, web-oriented service, web access statistic, library fund, user access.

1. Introduction

According to the concept of e-government development in Ukraine, e-democracy is “a form of organization of society in which citizens and businesses are involved in the process of public administration and state formation, as well as in local self-government through information and communication technologies”.

Stage I foresees the most general aspects of the use of modern ICT, when all necessary basis for further action by the state in this direction was formed.

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Stage II (2002-2003) is directly related to the formation of e-government mechanisms in Ukraine, which aimed to increase the efficiency and transparency of public authorities and local governments, improve public awareness of the activities of these bodies and intensify feedback communication between government and society through the Internet.

Counting of this stage can be conditionally conducted from the resolution of the Cabinet of Ministers of Ukraine “On the Procedure for Publishing Information on the Internet About the Activities of the Legislature” (January 4, 2002 3-2002-p), which approved the Procedure for publishing Internet information about the executive authorities”. During this period, the Decree of the President of Ukraine “On Additional Measures to Ensure Openness in the Activities of Public Authorities” and the Resolution of the Cabinet of Ministers of Ukraine “On Measures to Further Ensure Openness in Executive Bodies Activity” were adopted, which were also aimed at ensuring: the obligation of public authorities and local governments to create their own websites, prompt placement of official information on their activities, clear requirements for the content of government websites; creation of a government portal in order to form and implement a stable and understandable to citizens economic and social policy of the state. To this purpose, the entities responsible for the implementation of these regulations have been identified. The tasks of state and local self-government bodies were also defined regarding the functioning of official websites, their content, prompt publication of information, provision of relevant statistical information, prevention of restriction of the right to open information by citizens, regular press conferences in particular using the Internet.

The III stage began in 2003 with the adoption of the resolution of the Cabinet of Ministers of Ukraine “On Measures to Create an Electronic Information System” Electronic Government” (February 24, 2003 #208). The objectives of the proposed measures for the development of the information society were to provide citizens and legal entities with information and other services through the use of electronic information system “Electronic Government”, which provides information interaction between executive bodies and citizens, information and other services based on modern information technologies. During 2004-2009s, the procedure for interaction between public authorities and citizens was supplemented by several resolutions of the Cabinet of Ministers aimed at streamlining the interaction between the executive branch and civil society institutions. This step was aimed at developing and implementing an effective mechanism of communication between executive bodies and civil society development”, approved by the Cabinet of Ministers of Ukraine on November 21, 2007. The Concept defines the purpose, main tasks and principles of interaction between public authorities and civil society institutions, strengthening democracy. In 2009, the Concept was amended, concerning primarily the mandatory media coverage of the results of their activities and their discussion in public.

The beginning of the IV stage can be considered December 25, 2013, when the order of the Cabinet of Ministers of Ukraine approved changes to the action plan for the implementation of the Concept of e-government development in Ukraine (adopted on December 13, 2010). The order, in particular, provided for the creation of an interactive system for assessing the electronic readiness of Ukraine and the commissioning of the State Information System for electronic applications of citizens. Advantages of using e-government – improving public administration mechanism: establishing active interaction between government, government and business, government and citizens through ICT. An essential achievement of e-government is e-democracy. E-democracy is exactly the tool that optimizes the above-mentioned relationship between government and citizens in e-government. It is the phenomenon of e-democracy that allows the subjects of the state (government, local authorities, business, citizens) to regulate the list, content, methods of obtaining electronic services. E-democracy is not so much as ensuring citizen’s access to governance, but also control (primarily online) over government actions. Thus, e-democracy is a larger phenomenon than e-government. But preconditions for its formation are created by the implementation of the latest issue, as it gives impetus to citizens and companies to use the capabilities of IT at the state level.

Let’s consider the development and history of e-democracy on the example of Turkey. Because Turkey is a democracy with a tradition dating back to 1945, when the authoritarian presidential regime created by the founder of the modern Turkish state, Mustafa Kemal Ataturk, gave way to a multi-party-political system.

Turkey is becoming an increasingly democratic state. In recent years, it has revised its own form of “social contract” to more accurately reflect the sociopolitical aspirations of the population and to challenge the dominance of the secular elite in the political sphere. This was facilitated by a change in

the regulatory framework and the discrediting of the Kemalist regime. The source of the legitimacy of governance is now widely understood by the “masses”, who have long been marginalized by the political elite and modernization from top to bottom, rather than the state, although this change has led to tensions in Turkish society. Today, much of Turkey’s political system can be described as democratic, and especially within the AKP is making significant steps in further reforms. Both formal and informal participation in politics is quite high, surpassing some of the “consolidated” democracies of the West. A pluralistic political structure allows motivated participants to interact with the state more than under previous administrations. Despite progress, the military still has the potential to intervene, and there is “suppressed potential” in the political structure of the state.

Electronic voting is one of the most important components of e-democracy, which involves the use of computers or computerized voting equipment to vote in elections. The study concerning the requirements of electronic voting, which specifically indicate its implementation in Turkey. Today, the Turkish government began testing an electronic voting system developed by a private company for Turkish election purposes. E-democracy is the result of the development of information and communication technologies (ICT) by citizens in the process of using e-government services, the effectiveness of which depends on many factors of political, social, economic, informational, scientific and methodological, organizational, legal and other nature. E-democracy, which consists of all available means of communication, enables citizens to initiate some issues, control and influence the development and implementation of critical management decisions.

The aim of the article is to study the impact of e-democracy development on the process of stimulating the socio-economic development of the country.

1. Benefits of E-Democracy Implementation in the Process of Stimulating the Socio-Economic and Socio-Political Development of the Country

Support of local economic development by local authorities involves the implementation of a set of measures related to the implementation of local development policy documents, establishing public authorities to create favorable conditions for stimulating the development of small and medium business, stimulating and strengthening partnerships between local authorities, business community, social community, creating a favorable environment for achieving balanced socio-economic, infrastructural, environmental and institutional development of the community.

Electronic democracy (e-democracy) is a form of public relations in which citizens and organizations are involved in state-building and public administration, as well as in local self-government through the widespread use of information and communication technologies.

Ukrainian legislation defines e-democracy as a form of social relations in which citizens and civil society institutions are involved in state-building and public administration, in local self-government through the widespread use of information and communication technologies in democratic processes, in order to:

- strengthen the participation, initiative and involvement of citizens at all levels in public life;
- improve the transparency of the decision-making process, accountability of democratic institutions;
- improve the response of the subjects of power to the appeals of citizens;
- facilitate public discussions and draw citizens' attention to the decision-making process.

In Ukraine, e-democracy is in its infancy. The formation of the legal framework for the functioning of e-democracy began in 2003, when the laws “On electronic documents and electronic document management” and “On Electronic Digital Signature” were adopted. Prerequisites for the formation of e-democracy in Ukraine were the expansion of public access to the Internet and the intensive development of the IT sector. Civil society takes an active part in the formation of e-democracy in Ukraine. The rapid development of e-democracy in Ukraine is recognized by the UN: since 2015, our country has significantly increased its position in the ranking of e-democracy and now ranks 32nd. In November 2017, the Cabinet of Ministers of Ukraine approved the Concept for the Development of Electronic Democracy until 2020. According to the concept, by 2020 the formation of the regulatory framework for the formation of e-democracy in Ukraine should be completed. Innovations such as e-

voting or digital passports have not yet been introduced in Ukraine, but Ukrainian citizens can already use many tools of e-democracy.

The transition to the information society involves systematic changes in the social, economic, political, legal, cultural structure of society. Given the scale and depth of the envisaged changes, it is clear that they can be implemented only with the active assistance of public administration, as due to its obligations, the role of the state is always to coordinate all processes affecting society. At the same time, the role of the organizer of the project should belong not only to public administration bodies, but also to public organizations and public initiatives. In Ukraine, all these processes are chaotic, unsystematic, sometimes spontaneous and situational, and still an extremely important problem that hinders the establishment of e-democracy in Ukraine is the lack of adequate budget funding.

One of the main problems to be solved for the development of e-democracy is the problem of citizen identification. For safe elections or other interaction between citizens and the government, citizens must be able to identify themselves, and, this procedure must ensure the preservation of personal data and enable citizens to participate in discussion via the Internet.

The disadvantages of e-government in Ukraine are:

- lack of equality in public access to the Internet, reliable information on Internet
- the level of development of the information space and information society in Ukraine does not allow to implement effectively e-democracy in practice;
- the level of activity, consciousness and computer literacy of Ukraine citizens is too low and does not meet the necessary conditions for the effective functioning of e-democracy and its tools;
- Ukraine lacks reliable protection and the ability to ensure information security, which is an important condition for neutralizing many threats and the effectiveness of e-democracy.

Due to The Economist study [11], 167 countries scored from 0 to 10 based on 60 indicators. The Economist Intelligence Unit's Democracy Index of Ukraine are shown in Fig.1.

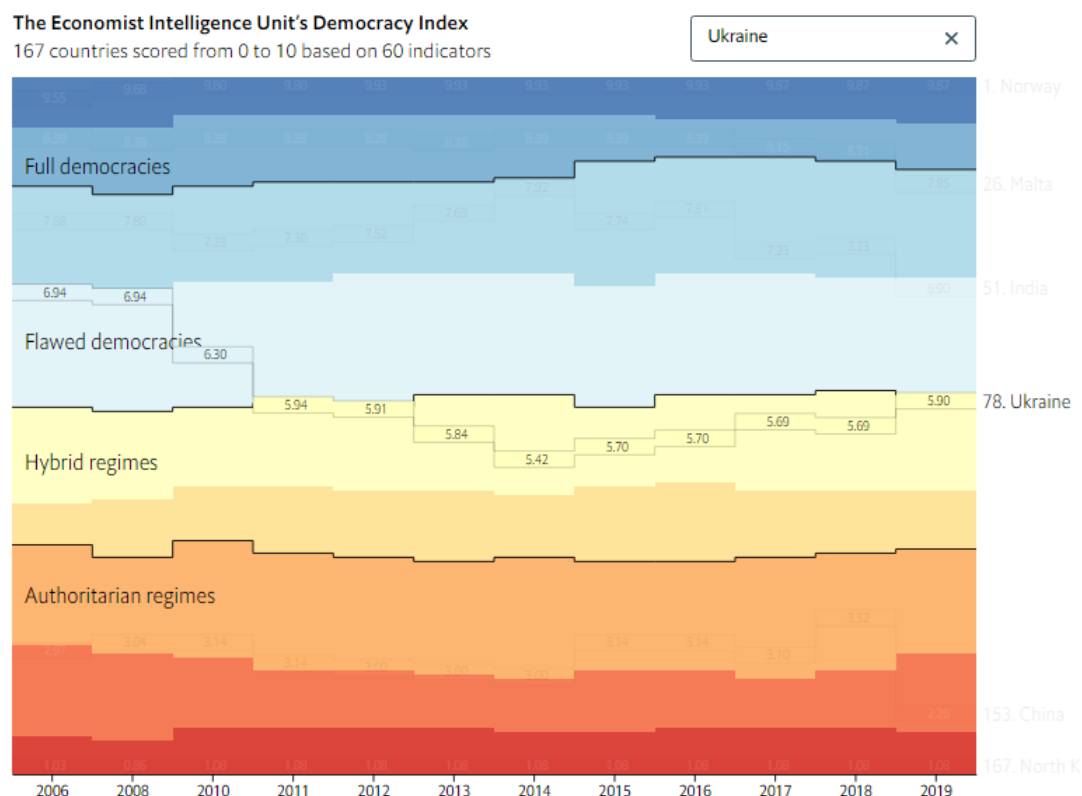


Figure 1: The Economist Intelligence Unit's Democracy Index of Ukraine [11]

Most of the responsibilities for the implementation of e-government in Ukraine are assigned to the State Agency for e-Government, but till now, from a legal point of view, virtually no improvements have been made to existing e-democracy tools, let alone the development of new ones. Successful implementation of e-democracy is possible with the modernization of communication infrastructure

and raising public awareness of the benefits of this form of democracy. The introduction of e-democracy is a long and gradual process, as a significant implementation obstacle is the digital barrier – limited access to modern means of communication for certain categories of the population.

2. Introduction of E-Democracy in the Process of Stimulating the Socio-Economic Development of the Country

Determining elements of citizen participation in government using information and communication technologies are:

- posting information about government activities on government websites (e-information);
- interactive discussion by citizens on the websites of government agencies of the problems of society development (e-consultations);
- government response to e-petitions of citizens (e-decision making).

The tools for e-involvement at every stage of policy making are as follows:

- E-communities;
- E-appeals;
- E-referendums;
- Electronic public juries.

The goals of e-democracy are similar to the goals of effective governance-transparency, accountability, responsibility, inclusion, discussion, inclusiveness, accessibility, participation, subsidiarity, trust in democracy, democratic institutions and democratic processes, social cohesion. Building an e-democracy system with a wide range of mechanisms and tools Transparency, Responsibility, Discussions, Comprehension, Subsidiarity, Inclusiveness, Participation, Accessibility, Trust, Cohesion, Reporting.

The use of various e-democracy tools in EU countries [12] is shown in Fig. 2

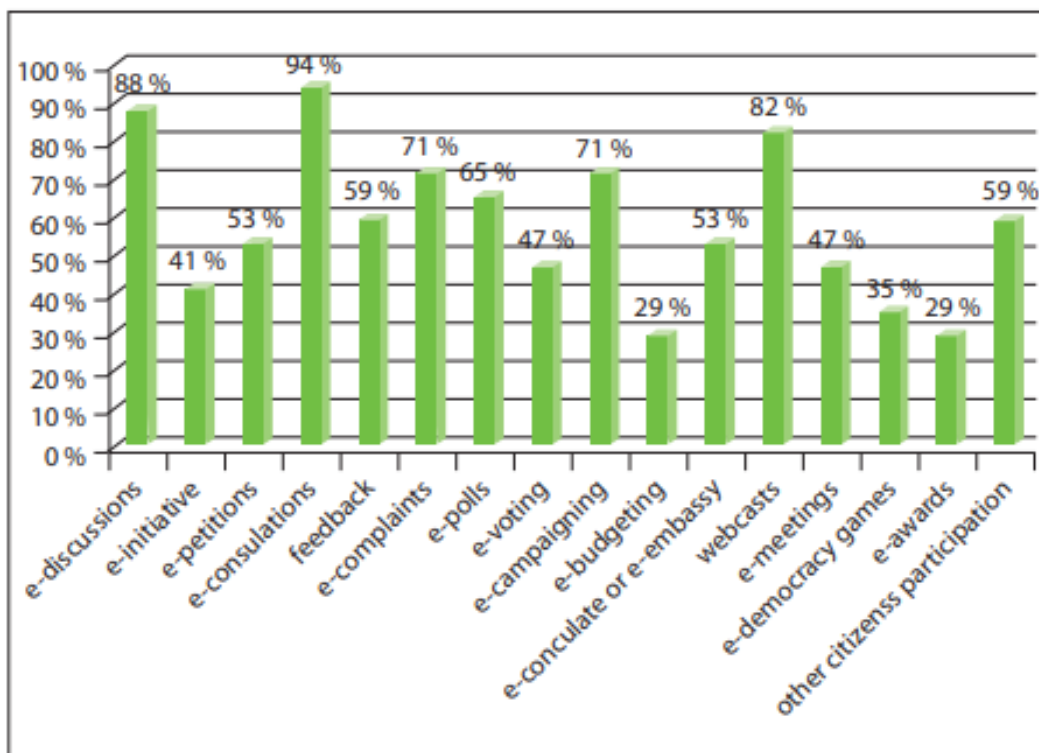


Figure 2: Use of various e-democracy tools in EU countries [12]



Figure 3: E-Democracy Sectors and Instruments

E-democracy includes e-legislation, e-parliament, e-justice and tools, including: e-mediation, e-initiative, e-elections, e-referendum, e-voting, e-consultations, e-appeals, e-campaigning, e-counting and e-voting poll. E-democracy takes advantage of e-participation, e-discussion and e-forums.

E-Democracy Sectors and Instruments: e-parliament, e-legislation, e-justice, e-mediation, e-consultations, e-initiative, e-referendum, e-poll, e-appeals, e-agitation, e-counting of votes, e-voting, e-elections.

2.1. Challenges to E-Governance

Issue related to e-governance

- Economic issues: cost, reusability, maintainability, portability;
- Technical issues: interoperability, security, privacy, authentication;
- Social issues: accessibility, usability, use of local languages, awareness of e-governance.

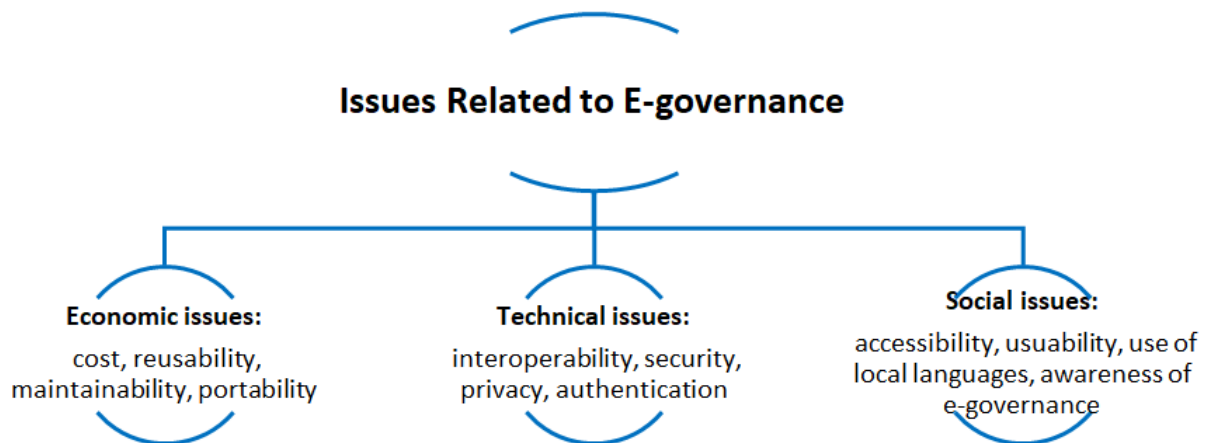


Figure 4: Issues Related to E-governance

3. Analysis of the Benefits of Implementing E-Democracy

With the development of information and communication technologies, the traditional way of democratic participation of citizens in political and public life is supplemented with the use of e-democracy tools, which not only facilitate online interaction between government and the public, but also increase transparency of government actions, discussions, sending own comments and suggestions, which should be taken into account by decision makers. Supporting such a virtual dialogue creates more sensual relationships between government and citizens.

The advantages of e-democracy are:

- a significant reduction in the cost of democratic procedures;
- reduction of costs for interactive forms of interaction with citizens, which allows public authorities to take more fully into account the views of different social groups in decision-making process;
- involvement of citizens in decision-making at earlier stages and in a closer form;
- involvement of social groups of citizens with disabilities, who find it difficult to ensure their public rights through “traditional” forms of democratic participation;
- strengthening citizens’ trust in the state due to the image functions of new communication channels, creating the illusion of citizens’ participation in decision-making;
- increasing the transparency of the public administration process;
- reducing corruption in government;
- increasing the quality of services provided by the government.

Effective implementation of e-democracy in Ukraine demands following conditions:

- actively providing comprehensive, balanced and objective information intended to help the public better understand the problems, alternatives, opportunities and / or solutions to democratic problems, which is closely linked to freedom of information and freedom of expression;
- a broad understanding of citizenship, covering individuals and groups of people who permanently reside and are integrated into political reality, regardless of nationality;
- increasing public participation by involving citizens and groups of citizens, corporations, associations and non-profit organizations in public affairs so that they can influence and improve the quality and acceptability of the results of democratic processes
- empowerment, in particular to uphold civil rights and provide resources for participation in democratic processes;
- ensuring the inclusion of political and technological weapons of citizens regardless of age, gender, education, socio-economic status, language, special needs and place of residence;

such inclusion requires human e-competence in the use of electronic tools (knowledge, electronic skills, electronic readiness), available tools and a combination of electronic and non-electronic approaches;

- conducting discussions, in particular, debates on equal terms, where people publicly discuss, approve and criticize each other's points of view during a meaningful, polite discussion of the issue and the actions needed to address the issue.

It is well known that the essence of e-democracy is the use of information technologies to strengthen democratic processes in the country. E-democracy is the basis of public participation in government decision-making and influencing public policy-making. First of all, the government is responsible for the development of e-democracy.

The following elements of e-democracy are implemented in modern Ukraine:

- electronic legislation regarding the publication of normative legal acts after their registration and adoption on the official website of the Verkhovna Rada;
- electronic court as the Unified state register of court decisions and operative exchange of information in electronic form between judicial institutions (a pilot project was introduced in 15 courts of general jurisdiction);
- electronic appeals, consultations and questionnaires (works partly, best in terms of electronic consultations of public authorities with the public – more than 1000 consultations are held per year);
- electronic portals such as Electronic Customs and Public Procurement Web Portal;
- websites of public authorities (today all central authorities have their own websites, but only a number of ministries support discussion thematic e-forums) local portals of administrative services;
- various online initiatives of non-governmental organizations.

For example, in Turkey, the practices of e-government and e-democracy are becoming increasingly important. In 2008, the electronic service “turkiye.gov.tr” was launched in Turkey – a Turkish e-government website, an information portal that is a resource that provides access to public services. The site was created to improve the efficiency of service and the use of digital technologies in Turkey.

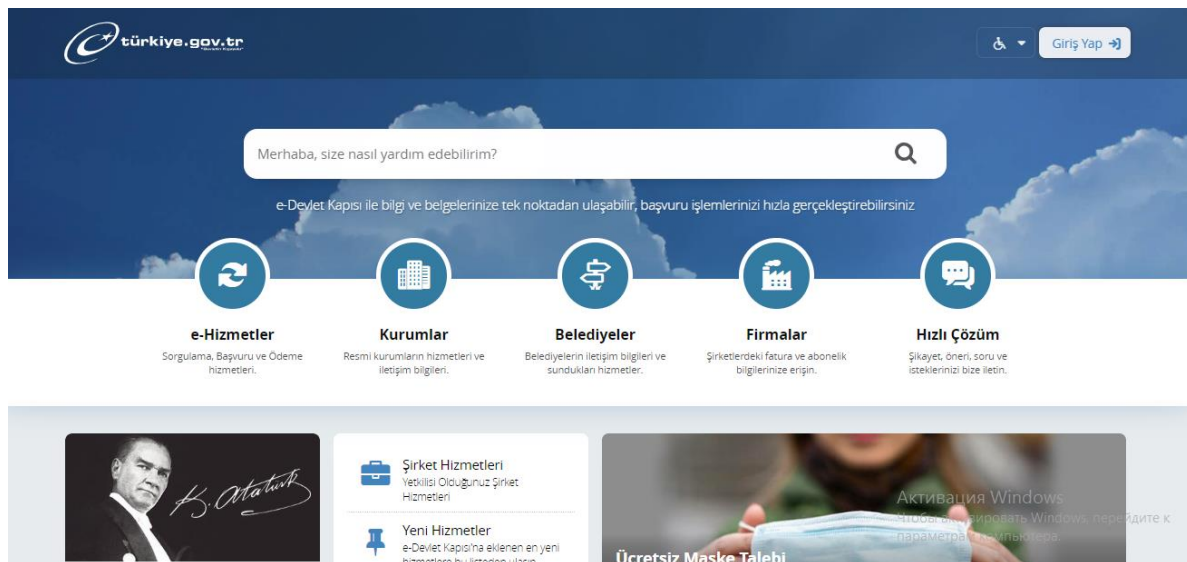


Figure 5: Website of the e-government of Turkey

At “turkiye.gov.tr”, users can access e-government through their ID numbers and passwords or ID cards. In addition to passwords, a mobile or digital signature is also available. Internet banking customers can access e-government from bank providers. Also, there were developed special applications for installation on the phone. It is also planned to create ID cards with chips in the future and increase the offered service. It is assumed, that thanks to such certificates it will be possible to carry out online voting. However, there have been experimental attempts to vote online on issues such as the

construction of new metro, bus and sea bus routes, the choice of the name of the new ferry, which showed the unwillingness of citizens to vote in this way.

Turkey is at the stage of incorporating e-democracy, citizens have free access to information, have the opportunity to address their problems, express their own ideas on solving state issues, there are dialogue forms of communication between citizens and government officials. However, there is a separation of powers and citizens in the country, there isn't enough trust between them, and it is the key to effective dialogue between the state and the public. Citizens don't yet act as equal partners with public authorities in making administrative decisions, in the legislative process, that's why we can't talk about full support for public order and approval of management decisions.

4. Conclusions

Introducing various forms of e-democracy, Turkey expands citizens' awareness of current policy issues, programs, legislative innovations and creates better opportunities for advising citizens and their participation in the decision-making process. Because of lack of effective mechanisms for constructive dialogue between the authorities and the public, the insufficient level of their interaction led to ineffective policies and therefore the improvement of existing and implementation of new democratic mechanisms of communication between government and citizens through the use of information and communication technologies becomes especially important.

Concerning Ukraine, our e-democracy is just beginning to develop and is at early stage of development. Most public authorities have their own websites, which display information about their activities, structure, publishing official documents, as well as holding online meetings and so on. However, most sites are formal and often contain outdated information. Only some of them have forms of feedback: electronic appeals, e-mail, online communication, Internet forums, public opinion polls on important issues and so on. However, there is no real participation and influence on management decisions. Opinion polls are often formal and their results are not taken into account. Citizens do not always respond to electronic appeals, proposals, etc., because these provisions are not enshrined in law.

5. References

- [1] E. O. Yigit and K. Colak, "The opinions of the pre-service teachers about e-democracy in Turkey," in *Innovation and Creativity in Education*, vol. 2, no. 2, H. Uzunboylu, Ed. Amsterdam: Elsevier Science Bv, 2010, pp. 712–716.
- [2] V. Sydor, "Informatization and Digitization of Land Relations in Ukraine: Problems and Prospects," *J. Law Polit. Sci.*, vol. 23, no. 2, pp. 209–232, Mar. 2020.
- [3] L. Sundberg, "Electronic government: Towards e-democracy or democracy at risk?," *Saf. Sci.*, vol. 118, pp. 22–32, Oct. 2019, doi: 10.1016/j.ssci.2019.04.030.
- [4] M. Z. Sobaci and K. Y. Eryigit, "Determinants of E-Democracy Adoption in Turkish Municipalities: An Analysis for Spatial Diffusion Effect," *Local Gov. Stud.*, vol. 41, no. 3, pp. 445–469, May 2015, doi: 10.1080/03003930.2014.995296.
- [5] A. A. Shyian, A. A. Azarova, L. O. Nikiforova, L. M. Tkachuk, and V. V. Azarova, "Modeling Communication Between the Public and the Authorities While Implementing Context of E-Democracy and Public Administration," *Sci. Innov.*, vol. 16, no. 6, pp. 18–27, 2020, doi: 10.15407/scin16.06.018.
- [6] A. A. Shyian, A. A. Azarova, L. O. Nikiforova, L. M. Tkachuk, and V. V. Azarova, "Modeling Communication Between the Public and the Authorities While Implementing Context of E-Democracy and Public Administration," *Sci. Innov.*, vol. 16, no. 6, pp. 18–27, 2020, doi: 10.15407/scin16.06.018.
- [7] E. Shireeva, A. Martynov, A. Kaplunov, and V. Ukhov, "Blocking Social Media. Reasoning and Legal Grounds," in *Digital Transformation and Global Society (dtgs 2017)*, vol. 745, D. A. Alexandrov, A. V. Boukhanovsky, A. V. Chugunov, Y. Kabanov, and O. Koltsova, Eds. Cham: Springer International Publishing Ag, 2017, pp. 139–147.
- [8] S. Sendag, "Pre-service teachers' perceptions about e-democracy: A case in Turkey," *Comput. Educ.*, vol. 55, no. 4, pp. 1684–1693, Dec. 2010, doi: 10.1016/j.compedu.2010.07.012.

- [9] R. C. Sampaio, S. Braga, M. C. Carlomagno, D. J. Franca Marioto, M. B. Alison, and T. P. Ferreira Borges da Silva, "State of the art of e-democracy in Brazil: offer and survival of initiatives (1999-2016)," *Rev. Serv. Publico*, vol. 70, no. 4, pp. 694–735, Dec. 2019.
- [10] Armstrong C. *Growing Democracy. Open government: teamwork, transparency and a participatory diet*. Kyiv, Science, 2011. P. 227–240.
- [11] The Economist Intelligence Unit's Democracy Index. <https://www.economist.com/graphic-detail/2020/01/22/global-democracy-has-another-bad-year>
- [12] Handbook on E-democracy. https://ega.ee/wp-content/uploads/2015/02/handbook_edemocracy.pdf
- [13] Y. M. Sadykova, M. Starynskyi, N. O. Horobetc, and Y. M. Zhornokui, "A Cost-Benefit Analysis of Preconditions and Predicted Effects from E-Voting Implementation in Ukraine," *TRAMES-J. Humanit. Soc. Sci.*, vol. 22, no. 3, pp. 257–271, 2018, doi: 10.3176/tr.2018.3.03.
- [14] M. Romero, "E-democracy: A conceptual construction," *Rev. Latinoam. Metodol. Cienc. Soc.*, vol. 10, no. 1, p. e067, Nov. 2020, doi: 10.24215/18537863e067.
- [15] A. Molnar and A. Urbanovics, "The role of e-democracy in Italy and Hungary," *Transform. Gov.-People Process Policy*, vol. 14, no. 3, pp. 545–560, Aug. 2020, doi: 10.1108/TG-01-2020-0010.
- [16] Fedushko S., Shevchuk L., Poritska A., Kravets R., Tymovchak-Maksymets O. *E-Commerce and E-Health Strategies and Implementation Activities in the United Kingdom: Review Study*. CEUR Workshop Proceedings. Vol-2647: Proceedings of the International Conference on Rural and Elderly Health Informatics (IREHI 2019), Senegal, Dakar, 4-6 December, 2019. pp. 10-20.
- [17] S. S. Mishra, "Testing the antecedents to e-democracy towards citizens' happiness: a structural equation modelling approach to 'MyGov' initiative, India," *Int. J. Public Adm.*, vol. 43, no. 15, pp. 1293–1303, Nov. 2020, doi: 10.1080/01900692.2019.1669051.
- [18] D. Khutkyy, "Electronic Democracy in Belarus, Moldova, and Ukraine. Patterns and Comparative Perspectives," *Sudosteuropa*, vol. 67, no. 2, pp. 264–284, Jun. 2019.
- [19] V. I. Hurkovskyy, "Electronic Petitions in Ukraine as an Element of Modern Democracy: Perspectives and Ways of Improvement," *Sci. Bull. Polissia*, no. 2, pp. 24–30, 2017, doi: 10.2514/2410-9576-2017-2-2(10)-24-30.
- [20] Onyshchuk O., Fedushko S., Syerov Yu. *Comparative Analysis of E-Democracy Implementation in Ukraine and Switzerland*. CEUR Workshop Proceedings. Vol-2654: Proceedings of the International Workshop on Cyber Hygiene (CybHyg-2019). Kyiv, Ukraine, November 30, 2019. pp. 629-628. <http://ceur-ws.org/Vol-2654/paper49.pdf>
- [21] Fedushko S., Ortynska N., Syerov Yu., Kravets R. *E-law and E-justice: Analysis of the Switzerland Experience*. CEUR Workshop Proceedings. Vol-2654: Proceedings of the International Workshop on Cyber Hygiene (CybHyg-2019). Kyiv, Ukraine, November 30, 2019. pp. 215-226. <http://ceur-ws.org/Vol-2654/paper17.pdf>
- [22] H. Lisnawati and A. Sinaga, "Data Mining with Associated Methods to Predict Consumer Purchasing Patterns," *IJMECS*, vol. 12, no. 5, pp. 16–28, Oct. 2020, doi: 10.5815/ijmeecs.2020.05.02.
- [23] O. Hujran, E. Abu-Shanab, and A. Aljaafreh, "Predictors for the adoption of e-democracy: an empirical evaluation based on a citizen-centric approach," *Transform. Gov.-People Process Policy*, vol. 14, no. 3, pp. 523–544, Aug. 2020, doi: 10.1108/TG-03-2019-0016.
- [24] W. Khan and Md. M. Rahaman, "Measuring the Performance of e-Primary School Systems in Bangladesh," *IJMECS*, vol. 12, no. 1, pp. 35–41, Feb. 2020, doi: 10.5815/ijmeecs.2020.01.05.
- [25] H. Hasan and H. Linger, "Letting the public in: dialectic tensions when local governments move beyond e-government to e-democracy," *Australas. J. Inf. Syst.*, vol. 24, 2020.
- [26] N. Bindu, C. P. Sankar, and K. S. Kumar, "From conventional governance to e-democracy: Tracing the evolution of e-governance research trends using network analysis tools," *Gov. Inf. Q.*, vol. 36, no. 3, pp. 385–399, Jul. 2019, doi: 10.1016/j.giq.2019.02.005.
- [27] M. Kneuer and M. Datts, "E-democracy and the Matter of Scale. Revisiting the Democratic Promises of the Internet in Terms of the Spatial Dimension," *Polit. Vierteljahresschr.*, vol. 61, no. 2, pp. 285–308, Jun. 2020, doi: 10.1007/s11615-020-00250-6.