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Digitisation of Ukraine in Terms of Public Electronic Services' Distribution

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Abstract. Modern scientific and technological progress makes the use of information, communication, and digital technologies an attribute of any business's functioning and people's lives. COVID-19 pandemic, which has led to widespread quarantine restrictions, has necessitated an accelerated transition to digital remote access services. In this regard, the authors have investigated the development and spread of digital technologies in Ukraine to implement e-government policy. To assess the realities and determine the prospects of becoming a "state in a smartphone", the authors have conducted a SWOT analysis of electronic public services. The analysis allowed to identify the advantages and threats of e-government at the present stage and outline the strategies for developing Ukrainian digitalisation. In the state as a service, digital changes are taking place in many industries and spheres, so the authors have identified key components of the digital state, including cybersecurity, e-government, smart cities, digital skills, e-court, e-health care, e-transport, and the Internet. These components are closely linked to e-democracy, e-business, and e-education. In Ukraine, there is a unique state web portal of electronic services, "Diia", which provides access to dozens of electronic state services. Therefore, the authors have studied the purpose, features of use, opportunities, and difficulties of the portal and mobile application "Diia". In the usage part, the authors have considered the specifics of authorisation on the portal through the file media of the digital signature and built the appropriate algorithm of actions. Along with the potential risks, modern information technologies provide many opportunities for their users. Finally, the study allowed to outline the prospects for the digitalisation of the Ukrainian state in modern realities

Keywords: "Diia", digital transformation, digital state, e-government



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INTRODUCTION

Digital technologies are a modern key trend, mediating all spheres of social life and economy. As a result, a digital economy is being developed, characterised by the active use of informational technologies and the turnover of specific electronic goods and services. Digitalisation goes beyond economic processes, and digital technologies are widely used in government structures and organisations.

Although Ukrainian e-government has just started to develop, there are examples of modern research on this topic. Among them, I. Fyshchuk and O. Evsyukova have explored effective communication in the digital transformation of service state during change management processes in Ukraine [1]. The authors' work, published in a Lithuanian journal, underlines the introduction of many reorganisation forms like civil society, unions, or associations. It makes a need to provide an efficient way for them to communicate with authorities altogether and due to personal requests. Furthermore, V. Psota et al. have investigated the "Competition in public procurement in the fight against corruption: analysis of an example of Ukraine" [2]. This paper gives evidence of the beneficial impact of e-reforms which help save budget money and reduce the possibility for corruption, increase transparency, and help to arrange the monitoring and control systems.

World COVID-19 pandemic has put new tasks to improve every country health system. Digital technologies, like e-health, give the change to react faster, keep and analyse big data, get information remotely. S. Kutia et al. have evaluated the socio-technological factors affecting users' adoption of e-Health functionalities [3].

Modern e-government can help arrange regular communication and surveys to find out the residents' point of view in a small community [4]. Moreover, it is essential to note the involvement of the public in the reforms as a critical guarantee of their success in the long run [5].

Thus, modern information technology has become part of the developed economies' daily lives, the work of their governments and local authorities, and rapidly spreads in growing economies. After all, such communication is an opportunity to be in touch with the whole world, process large amounts of information rapidly, provide many services remotely, and maintain a decent quality of life in the conditions of quarantine restrictions. The broader use of gadgets by all segments of the population, including the elderly and children necessitates public services via mobile devices. The growing coverage of access to the global Internet allows making various online purchases in different parts of the world, process statistical information by a wide range of specialists, make an appointment to the specific doctor at a convenient time, receive and provide advice, work as a freelancer, and even travel virtually.

All the above mentioned gives confidence that public electronic services have a certain future, needs to be explored, improved, and widely discussed. Moreover, this discussion can help finding new answers to the old questions, modern problems, visions, and ideas to fix bugs or eliminate the barriers. That helps to formulate the aim of the study: to investigate the current state of electronic public services in Ukraine and determine its strengths and weaknesses to substantiate the key trends and prospects of becoming a "state in a smartphone".

LITERATURE REVIEW

The informatisation has reached government systems and public services. In this context J.D. Twizeyimana and A. Andersson have made a literature review on the public value of E-Government [6]; I.K. Mensah – the impact of E-government performance on the process of adoption of E-Government services [7]; D. Valle-Cruz has evaluated the public value of e-government services through emerging technologies [8]; S. Defitri et al. have discussed determinant factors of e-government implementation and public accountability [9]; N.G. Elbahnasawy has answered the question if E-government can limit the scope of the informal economy [10]; D. Geneiatakis et al. have made a blockchain performance analysis for supporting cross-border E-Government services [11]; L. Sundberg has searched for an answer if the democracy is at risk in electronic government [12]; M. Danyliuk et al. have formulated the factors of direct and indirect influence of informatisation on the society, economy, and the state [13], and finally; V. Roblek et al. have evaluated the best practices of the social innovations in the framework of the e-government evolution [14].

Ukraine and other developing countries have just started to use e-services in a wide range of spheres. For instance, I. Palaco et al. have investigated the public-private partnerships for e-government in developing countries [15]; C. Knox and S. Janenova have examined the e-government paradox in post-Soviet countries [16]; L. Glyptis et al. have explored the project manager's perspective of e-Government implementation challenges in small countries [17]; M. Barna and S. Moroz have studied the digital development of the economies of Ukraine and the European Union [18].

Simultaneously many scientists have investigated a lot of different features in e-government services all over the world. Among them are Y.C. Chen et al., exploring the determinants of performance of the cross-boundary e-government systems [19]; R. Pérez-Morote et al. – the EU effects of e-government evaluation, trust, and the digital divide [20]; M.D. Lytras and A.C. Şerban – e-government insights to EU smart cities research [21]; I.O. Adam – E-Government development effects on corruption in

Africa [22]; Y. Li and H. Shang – the service quality, perceived value, and citizens' continuous-use intention regarding e-government in China [23]; T. Bournaris – e-government web portals in Greece [24]; S. Kukovič and G. Justinek – modernisation trends in public administration in Slovenia [25]; A. Sandor – web-based information management [26].

In Ukraine, digitalisation is entering a qualitatively new stage of its development, characterised by the development of digital technologies, the spread of Internet networks, and mobile communications. This allows to unite the state with a single communication system and create a holistic financial and information space. To optimise the central executive bodies, the Cabinet of Ministers of Ukraine in 2019 established the Ministry of Digital Transformation of Ukraine to implement digital development and e-government [27].

The main principles of the Ministry's work are based on the Concept of e-government development in Ukraine [28]. The purpose of the Concept is to coordinate cooperation between public authorities and local governments to achieve a high level of e-government efficiency, implementation of the decentralisation reform based on the widespread use of modern digital technologies throughout the country following the European requirements.

In Ukraine, public authorities and local governments provide more than 2,000 services, but 91.5% of the population of Ukraine do not use public services online [29]. At the same time, the public services' provision is accompanied by significant inconveniences, time, and financial costs. Instead, the public services digitisation will make them accessible, transparent, convenient, and understandable.

Moreover, electronic public services have not yet become familiar to all Ukrainians, and their implementation, in addition to the benefits, is accompanied by risks and caveats.

MATERIALS AND METHODS

To achieve the research aim, the authors have studied the scientific works of leading national and foreign researchers in this field, as well as current trends in the digital transformation of Ukraine. This made it possible to identify the key components of the digital state, to assess their role, relationship, and interaction. This research step used historical and logical scientific research methods, induction and deduction, scientific abstraction, and systems analysis.

At the stage of studying the "Diia" portal and application, the authors considered the technical side of its work from the user's point of view, built an algorithm for using the electronic signature file media, explored the possibilities of "Diia" at the present stage. To do this, the authors downloaded from the App Store (digital distribution platform for selling mobile applications to iPhone smartphone owners) the application "Diia" on

the smartphone and chose the most convenient way to authorise through BankId, using Privat24. By permitting to the Ministry of Digital Transformation of Ukraine to process personal data, the authors gained access to digital documents and electronic government services. Then the authors have also registered on the "Diia" web portal to get additional information.

For the study, the authors used the problem-finding method and the comparison method. Based on the analysis and synthesis, the authors have found that the number of services available in the "Diia" is somewhat limited compared to the web portal. Also, by comparison, the authors were able to determine the regional nature of e-government services and identify the most popular services.

The own empirical user's experience also influenced the presentation of this part of the study material. This, in turn, has increased the efficiency of identifying shortcomings and "bottlenecks" in the system's functioning.

Based on the statistical observation method, the authors were able to determine the dynamics of the users' number in the web portal and the application "Diia", the number of vaccination applications, and identify the regions where the most significant percentage of families used the service "eMaliatko."

Using the method of generalisation, it was concluded that despite some limitations and ambiguous attitudes in society, the project "Diia" is a significant achievement in the rapid development of digitalisation.

To assess the realities and prospects of the digital state in Ukraine, the authors have chosen the SWOT analysis method [30], which significantly helped identifying the strengths and weaknesses of the electronic public services system and the opportunities and threats of their implementation in everyday practice. After this, the strategic tasks and goals were determined.

RESULTS AND DISCUSSION

Digital state

Digitalisation of public services is designed to change the mechanisms and principles of public services radically. However, as the authors are considering the scale of the whole country, this process is not simple and is accompanied by complex technical, technological, social, and cultural changes.

Modern electronic public services have not yet completely replaced their previous paper counterparts. This means that many services coexist in both forms, which leads to an increase in funding for providing them during the transition to complete digitalisation. However, while the population is not technically ready for complete digitalisation, it has not yet become accustomed to the convenience of electronic services; public authorities and local governments have not yet worked out an effective mechanism for the digital state – this situation is forced but logical and understandable.

In Ukraine, there is an active development of the

most prominent digital project, “Digital State”, which considers the state service in global informatisation and digitalisation. The changes in Ukraine concern both administrative services and the areas of health care,

business, education, transport, courts, democracy issues, etc. Figure 1 shows the digital state components, which ensure its proper and efficient functioning.

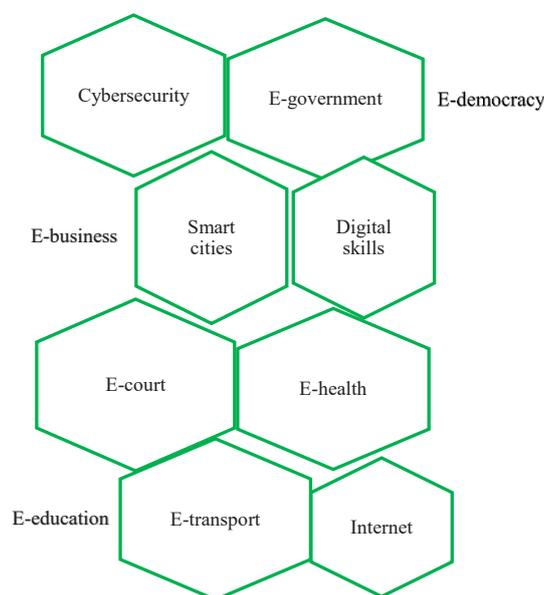


Figure 1. Components of the digital state

As shown in Figure 1, digital technologies play a significant role in building a digital state. Therefore, it is necessary to ensure proper Internet access to electronic services, especially in rural areas.

The provision of the Internet in the context of the spread of COVID-19 has become one of the most pressing problems, the solution of which will help to overcome the digital divide, create new jobs in cities and villages. Simultaneously, it is crucial to develop digital literacy, which is one of the main drivers of the unrestricted use of electronic services. Moreover, modern realities demonstrate the urgent need to govern the state with the help of information technology, the so-called “state in a smartphone”.

One of the long-term goals in building a “state in a smartphone” is online democracy. For example, the introduction of digital voting in Ukraine will significantly reduce the scale of election fraud and help consolidate young Ukrainians’ participation in the country’s democratisation [31].

“Diia”: Purpose and use

At the beginning of 2020, the Ministry of Digital Transformation of Ukraine has introduced the state web portal of electronic services the “Diia”, which provides access to 50 electronic services. In addition, the mobile application “Diia”, which provides access to digital documents and public services, has also become widely available. The mobile application allows access to 9 digital documents: passport of a citizen of Ukraine in the form of

an ID-card; biometric passport; taxpayer cards; driver’s license; vehicle registration certificates; student card, certificate of internally displaced person; birth certificate of the child [32].

The “Diia” project is a flagman for Ukraine in the digitalisation process. According to the Ministry of Digital Transformation of Ukraine, by 2024, all public services in Ukraine will be provided online [32]. Regarding the financing of this project: public funds were not spent. The “Diia” portal was created in cooperation with the Ministry of Digital Transformation of Ukraine with the support of the USAID / UK aid project “Transparency and Accountability in Public Administration and Services / TAPAS”, the EGAP Program funded by the Swiss Agency for Development and Cooperation and implemented by the Eastern Europe Foundation and Innovabridge, USAID project the “VzaemoDiia” (SACCI) and the EGOV4UKRAINE project.

Registering a user on the “Diia” portal involves several steps. First, authorisation takes place from ID.GOV.UA using BankID, MobileID, personal file key, or hardware key. The private key (electronic signature) can be stored on file, cloud, or other secure media. It can also be written to an ID-card or token. The latter can take the form of a USB device or smart card.

The most common authorisation method on the “Diia” portal is signature electronic file media. This file is usually called Key-6 with the extension *.dat (there are also extensions *.pfx, *.pk8, *.zs2, *.jks). The algorithm for using file media is shown in Figure 2.

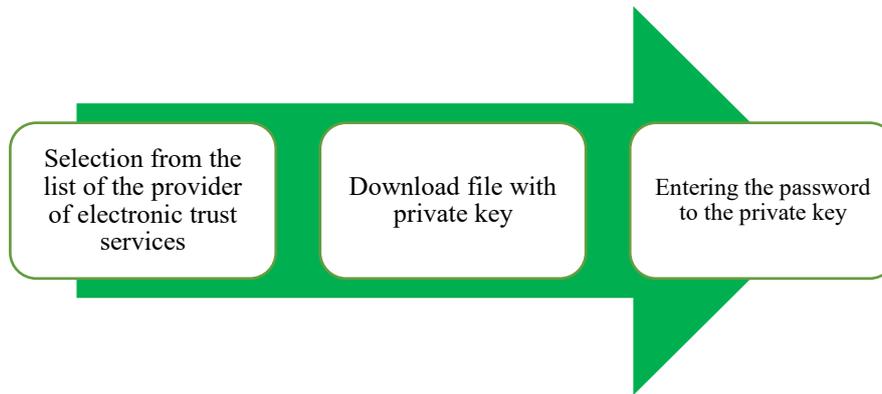


Figure 2. Algorithm for using the electronic signature file media

For the first step, the user must choose the e-trust provider from the 22 entities available on the portal. Therefore, the experience of using the “Diia” portal is sometimes accompanied by a failure and termination of user access. Yet, the situation can be easily corrected by clearing the cache or using another browser for electronic digital signature authorisation.

At the same time, citizens of Ukraine have the opportunity to download the “Diia” application on their smartphone from the App Store or Play Market. After downloading the application, the user must log in using BankID, which is possible for the clients of 31 banks, and consent to the transfer of information to the “Diia” application. Here the authors can declare one of the disadvantages of this application because if a person is not a client of any of the listed banks, he/she will not be able to use the “Diia”. Therefore, improving the authorisation process with a new modern identification using Near Field Communication (NFC) technology would probably be appropriate.

However, the number of banks that have joined BankID is constantly growing. At the authorisation stage, the user has a logical question about the leakage of personal data because authorisation with BankID gives the application access to bank cards, accounts, and, ultimately, personal data. The government portal notes that information about the leak of citizens' data from the digital public service the “Diia”, which assertedly took place in May 2020, during some operational and investigative actions, was not confirmed, and the Cyberpolice Department did not reveal the facts of cyber incidents [33].

However, the official portal states that the “Diia” is a well-protected platform located in a reliable data center and meets global standards for protection against cyber threats [34].

“Diia”: Scope

During the authorisation in the “Diia” application with the help of, for instance, Privat24, the user gives consent to the Ministry of Digital Transformation of Ukraine to process personal data. The Ministry of Digital Transformation of Ukraine gets access to personal data:

- full name;

- registration number of the taxpayers' account card;
- passport series and number;
- e-mail address;
- phone number;
- address of residence;
- place of birth.

According to the Ministry of Digital Transformation of Ukraine, the “Diia” keeps a minimum of information about its users through encryption and the use of blockchain distributed storage technologies. It is also defined that the application does not access the user's financial data in Privat24, which is quite logical from cybersecurity.

Currently, digital documents and many services are available in the “Diia” application, but their number, compared to the official portal, is somewhat limited. The user has the opportunity to receive the following services:

- to pay a fine for violating traffic rules;
- to pay debts on enforcement proceedings;
- to share copies of digital documents;
- to verify the authenticity of another person's digital documents.

With the help of a digital document, Ukrainians can:

- use administrative and other public services;
- travel the country by rail and air;
- receive medical care;
- conduct banking operations;
- confirm the person upon request.

The application's purpose is to reduce all bureaucratic procedures and processes to a smartphone. As a result, any user does not need to worry about documents that could be forgotten at home. As for user statistics, their number has been actively growing since the beginning of the “Diia” application. On the day of application release on February 6, 2020, 310,031 users had already registered in it. In April 2020, the application was used by 2 million citizens, as of May 5, 2020 – 3 million citizens, and the portal – 107,708”. According to the Minister of Digital Transformation Mykhailo Fedorov this number has not decreased and amounted to 3 million 512 thousand as of June 2020. As of February 2021, the number of users exceeded 10 million people [35].

“eMaliatko”

Today, of the 43 services available on the official “Diia” portal, the most popular are the entry to the COVID-19 vaccination waiting list, the opening of a natural person – entrepreneur, there is a baby registration of the child’s place of residence, unemployment benefits and signing documents. However, each of the services mentioned above has its regional characteristics. Thus, if the entry in the vaccination waiting list allows the vaccine to be adequately distributed among the regions, the registration of the child’s place of residence is available in Kharkiv, Lutsk, Rivne, Vinnytsia, Mariupol, Kryvyi Rih, Khmelnytskyi, Lviv.

Services such as traffic fines, enforcement proceedings, and registration in the COVID-19 vaccination waiting list are available in the “Diia” application. Currently under development are the following services: driver’s license replacement, technical passport sharing, taxes, and smart-Diia.

Despite all the positive characteristics, the “Digital State” project needs to be improved. So, for example, using the “eMaliatko” service, one can register the birth of a child, get a certificate of birth, as well as order 9 other government services required for a newborn child. However, to order the service, one must have a medical report number from eHealth by phone text message to the number specified in the declaration signed with the family doctor. In case of loss of the sim card or change of the phone number, the procedure of changing the patient’s contact phone number is quite tricky and can take an unreasonably long time. Therefore, being registered on the “Diia” portal, a young mother does not have the opportunity to use electronic services without queues, bureaucracy, unnecessary travel, and effort. Nevertheless, she is forced to apply to the Department of Social Policy, to spend her time in long queues to get to the appropriate specialist. Thereby, there is the need to significantly simplify the procedure for changing the doctor’s phone number specified in the declaration.

Since June 2021, the comprehensive service “eMaliatko” has become available to parents of children born in the temporarily occupied Autonomous Republic of Crimea or areas in Donetsk or Luhansk regions. In July, 86% of parents used the “eMaliatko” service. According to statistics, the most popular service is in Rivne and Cherkasy regions (98%), Lviv region (97%), Volyn, Ternopil and Chernivtsi regions (95%). More than 125,000 families in 780 settlements have already used the “eMaliatko” service [36].

In August 2021, Ukraine joined the Digital COVID Certificate initiative, and the EU officially recognised the Ukrainian COVID certificates available in the “Diia” application. In a broad context, such a European Commission’s decision, in our opinion, testifies to the recognition of the work efficiency and trust in Ukrainian state institutions and the appropriate personal data protection. The COVID certificate, generated in the “Diia” application

in a few clicks, confirms the vaccination status. The introduction of COVID-certificates will guarantee the citizens’ safety in pandemics and restore regular communication between countries.

In 2021, Ukraine equated digital passports with paper ones, indicating the rapid pace of digitalisation as a world leader. This positively distinguishes our country from others that have not yet introduced such an innovation [37].

Creating the “Diia” and the transformation to the service state aims to destroy the old bureaucratic system. Today Ukraine’s entry into “paperless” mode can be witnessed, which is the basis of the digital state. However, some public authorities are slow to respond to these innovations, thus slowing down the whole transition process.

The essential components for the “paperless” implementation are digital documents the “Diia”, the availability of all public services online and the electronic document management introduction, as well as the adoption of appropriate laws to implement the “paperless” regime. Furthermore, the electronic document management introduction will create a new state-of-the-art state system, services will become more transparent and accessible to citizens, and the human factor will be excluded from the decision-making process. The latest technologies are one of the main methods to combating bureaucracy, corruption, and injustice.

Difficulties

It is worth noting that the rapid digitalisation, which has gripped society and economy, has met the people’s resistance. Some do not want or do not have the opportunity to use the modern system and continue to work manually. Therefore, the authors consider it necessary to make changes in the legislation and functionality of the application to make the use of digital passports convenient for citizens and accessible to businesses. After all, the absence of data readers significantly slows down the process of building a “state in a smartphone”. Thus, the process of digitalisation is quite long in time, and the construction of a digital state is not a one-time act.

Ambiguous attitudes have been developed among Ukrainian society regarding the electronic service “Diia at Home”, which, according to the Chairman of the Ukrainian Helsinki Human Rights Union, Director of the Kharkiv Human Rights Group Yevhen Zakharov, actually violates human rights to personal data protection and privacy of communications convention. Installing the “Diia at Home” application involves monitoring the observation. Then, the user enters the address at which they undertake the isolation for two weeks. However, the essential condition for successful self-isolation is the availability of the Internet. Therefore, its absence entails administrative and criminal liability; if a person does not get in touch, the verification is considered unsuccessful, and an automatic notification is sent to the

National Police. This state of affairs caused mass dissatisfaction among Ukrainians.

From March 1, 2021, helpful service in a problematic epidemiological situation has become available in the "Diia": an entry to the vaccination from the COVID-19 waiting list. It saves much time, avoids queues, and the process of drawing up unnecessary documents. The implementation of this service is possible thanks to the EGAP Program, implemented by the Eastern Europe Foundation and funded by Switzerland.

Thus, as of March 2, 2021, out of 45.5 thousand applications for vaccination, 40.065 thousand were made in the "Diia" application, 5435 – on the "Diia" portal. Of the first 100 thousand applications as of March 3, 2021, 87.3 thousand (87.3%) were submitted in the "Diia" application, 9.9 thousand (9.9%) – on the "Diia" portal, 2.8 thousand (2.8%) – with the help of the contact center of the Ministry of Health of Ukraine. On July 21, 2021, the 5th stage of the national vaccination plan began. Now everyone, regardless of age and other factors, can sign up directly for vaccination. Therefore, the entry in the queue for vaccination through the site or mobile the "Diia" application is canceled. However, 698 thousand Ukrainians signed up for vaccination during the whole time, and more than 40% have already been vaccinated [35].

Another limitation for users of the "Diia" should also be noted – the lack of the account deleting function, which, in our opinion, is quite debatable. For instance, it is needed to take the following steps to delete the account on the portal:

- the user writes to the "Diia" Support Service, stating the reasons for deleting the account;
- the manager processes the application and sends it to a specialist;
- the specialist studies the situation and decides on the possibility or impossibility of removal.

Therefore, deleting an account is a long process, and the reasons for deletion must be valid.

In addition, along with the unconditional advantages of digital services, it cannot be ruled out that some people do not want or will not be able to go online due to religion, age, and other characteristics. However, they cannot be deprived of the opportunity to receive the necessary services. Thus, it is vital to simultaneously promote digital literacy, education, and instruction of citizens on the use of information and communication systems to establish an alternative way of providing such services. Of course, in the rapid development of digitalisation, the state will be irrational and simply unprofitable to provide paper and digital services in parallel, so, in the authors' opinion, based on the administrative service centers in the united territorial communities should remain a specialist who can help to use the required service on appropriate equipment.

Recently European Union have announced European Digital Identity Wallet which is accepted in all member states which will allow citizens to digitally identify themselves, store and manage identity data and official documents in electronic format [38].

Thereby, the "Diia" application is a new impulse in the field of electronic public services. The application allows receiving the maximum of public services online, establishes and accelerates any interaction of citizens with the state, and encourages to expand one's horizons and acquire digital literacy. Furthermore, it destroys bureaucracy and constant queues to obtain the necessary state-standard document.

SWOT analysis

In the authors' opinion, SWOT analysis allows users to take a more reasonable approach to their adoption of electronic services. Areas for improving e-public services should be developed based on a thorough analysis of their strengths and opportunities to correct weaknesses based on identifying external and internal factors (Table 1).

Table 1. SWOT analysis of the digital state in Ukraine

S-Strengths	W-Weaknesses
Single data system Public services' quality and speed increasing Services availability in the outlying area Innovation in the public sphere Environmental and energy efficiency Effective feedback Stable work in pandemic conditions	Low digital literacy Distrust of public authorities Service provision mechanism failure Incomplete Internet access coverage Rejection of the population that does not accept change Limited state financial and technical resources
O-Opportunities	T-Threats
Expanding the list of e-documents and e-services Public authorities' efficiency improving Budget savings Transparency increasing State bureaucracy's level reducing World-wide services use Information availability increasing	Low cyber security Possibility of uncontrolled access to the data User errors risk System failures Development underfunding The low popularity of e-products Political transformations and change of strategic priorities

The analysis of the advantages of e-public services allowed identifying the strengths and opportunities for their improvement, which are to displace paperwork and routine administrative procedures, speed up processing and exchange of information, provide timely information, improve the quality and effectiveness of feedback and communication transparency with public authorities and achieve a higher level of service to users of public services.

Identifying the problems associated with the development of electronic public services helped the authors finding their weaknesses and threats to its implementation and dissemination. In the authors' opinion, the analysis of barriers and problems facing the spread of electronic public services is fundamental in choosing the most acceptable option for their adaptation into practice.

The main reasons that hinder the introduction of electronic public services are satisfied with the current practice of providing public services, the uncertainty of users and misunderstanding of the benefits of electronic public services, and the lack of resources to implement shared services (financial and technical). Last but not least is the issue of cyber security, as hacker attacks can lead to the leakage of personal data and paralyse the work of public authorities. When joining together:

- Opportunities and Strengths – one can get O-S Strategy;
- Opportunities and Weaknesses – one can get O-W Strategy;
- Treats and Strengths – one can get T-S Strategy;
- Treats and Weakness – one can get T-W Strategy (Table 2).

Table 2. Digital state strategies

O-S Strategy	O-W Strategy
All data in one place collecting High-efficiency and high-speed e-government Sustainable development	Digital friendly users rising State-People closer connection Transparency policy
T-S Strategy	T-W Strategy
E-services popularisation Quality management Money redistribution	Life-long learning Internet access spread Political stability

The SWOT analysis allowed the authors to identify critical areas of digital state development, which is primarily represented by e-government. Gathering all crucial information on one platform will significantly increase data processing speed, the efficiency of electronic services in general, and sustainable development.

It would be logical to implement measures to expand the number of confident Internet users, including lifelong learning to overcome the threats in this context. In the authors' opinion, the digital literacy achievement, in turn, will raise the government trust level as a whole. However, for the e-government system to work effectively, it is also necessary to pay attention to quality management and boost the productivity of civil servants.

Thus, the current priorities necessitate the redistribution of financial resources from often bureaucratized and inefficient paper transactions to informatization.

CONCLUSIONS

Today, the world is increasingly moving to the Internet, digital codes, and mobile applications. To stay in the world change trend and use modern information progress advantages, every citizen and the state must be open to innovation. In the research, the authors studied the current state of digitalisation of Ukraine and identified

the following key characteristics and trends of this process:

- necessary conditions for the successful completion of the digitalisation process are the population's readiness for qualitative changes and purely technical aspects related to increasing the Internet coverage area.
- An essential step forward in digitalisation was the launch of the flagship project "Diia", which should provide access to digital documents and e-government services and minimise the human factor in the decision-making process.
- Building a "state in a smartphone" is a long and challenging process on the road to universal digitalisation, which will destroy the old bureaucratic system, move to a "paperless" business and make services more transparent and accessible with free Internet access.
- A crucial element of the transition to a digital state is the promotion of digital literacy through educational activities.
- Based on SWOT analysis, in addition to strengths and opportunities, barriers and threats that hinder the digitalisation process were identified, including the lack of public understanding of the benefits of e-government and cybersecurity. Timely identified threats can be minimised or eliminated through effective and timely strategic and tactical planning.

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Цифровізація України в частині поширення публічних електронних послуг

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Анотація. Сучасний науково-технічний прогрес робить застосування інформаційно-комунікаційних технологій атрибутом функціонування будь-якого господарюючого суб'єкта та життя кожної людини. Пандемія коронавірусу, що призвела до масових карантинних обмежень, зумовила необхідність пришвидшення переходу до надання цифрових послуг в умовах віддаленого доступу. У зв'язку з цим метою роботи було дослідження розвитку і поширення цифрових технологій в Україні в частині реалізації політики електронного урядування. Для того, щоб оцінити реалії та визначити перспективи становлення «держави у смартфоні», було проведено SWOT-аналіз електронних публічних послуг. Відтак було визначено переваги та загрози електронного урядування на сучасному етапі, а також намічено подальші стратегії розвитку цифровізації в Україні. У процесі розвитку ідеї держави як сервісу відбуваються цифрові зміни у багатьох галузях та сферах, тому було виокремлено ключові складові цифрової держави, зокрема кібербезпеку, електронне урядування, розумні міста, цифрові навички, електронний суд та систему охорони здоров'я, електронну транспортну систему та Інтернет. Визначено, що ці складові тісно стосуються таких компонентів як електронна демократія, електронний бізнес та електронна освіта. Варто відзначити, що в Україні функціонує унікальний державний веб-портал електронних послуг «Дія», що забезпечує доступ до десятків електронних послуг держави. Тому було детально досліджено призначення, можливості та труднощі користування порталом і мобільним додатком «Дія». У частині системи користування «Дією» було розглянуто специфіку авторизації на порталі через файловий носій цифрового підпису та побудовано відповідний алгоритм дій. Підтверджено, що поряд із потенційними ризиками сучасні інформаційні технології дають безліч можливостей для їхніх користувачів. Загалом дослідження дало змогу окреслити перспективи цифровізації української держави в умовах сучасних реалій

Ключові слова: «Дія», цифрова трансформація, цифрова держава, електронне урядування