International Journal of Civil Service Reform and Practice
Vol. 11, No 1; 2023 e-ISSN 2409-5532
Published by the Astana Civil Service Hub

COMPARATIVE ANALYSIS OF POLICY AND PRACTICE OF KAZAKHSTAN'S OPEN DATA

Raul Nugis[1], Virgo Riispapp[2]

Received:
December 19, 2022

Revised:
February 6, 2023

Accepted:
February 20, 2023

DOI:
10.56289/ijcsrp.190

ABSTRACT

The article presents an analysis of Kazakhstan's open data policy and portal, comparing them with those of the European Union, Canada, and Estonia. It highlights the importance of both core policies and implementation measures, as well as the supporting ecosystems composed of various actors both inside and outside government. The article also includes results from a limited practical and technical evaluation of selected open data portals, focusing on usability, data functionality, and accessibility, along with use cases and directions for open data implementation. While specific proposals for improving the implementation of Kazakhstan's open data policy are provided – together with relevant use cases and implementation directions – we hope the findings will also be of interest to readers concerned with the open data policies and portals of Canada, Estonia, and the EU. Finally, the article offers an overview of insights gathered during the research conducted in November 2022, supported by surveys of civil servants from both local and central government bodies with engagements taking place in January 2023. The survey data provides valuable information about participants' innovative ideas for using open data to address current challenges in the country, as well as their forward-looking attitudes toward future reforms.

Keywords*: Open Data, Open Data Portal, Information, Proactive Dissemination of Information, Socially Significant Information, Personal Data.*

INTRODUCTION

The concept of equal access to data has a long history of origin and development (Marr, 2015). The term was first officially introduced in the 1995 U.S. Report "On the Full and Open Exchange of Scientific Data" (National Research Council, 1995). This concept was later developed across various fields, primarily in statistics (Darmenova et al., 2020; Badiee et al., 2021).

Promoting the idea of ensuring transparency and accountability in government activities has become a driver for the development of open data policies,[3] and the creation of open data portals. Enhancing the transparency of government information helps to strengthen citizens' rights to access public information and encourages greater participation in decision-making.

In general, open data policy can be understood as a system of laws, regulations, action plans, and guidelines established by governments to promote the availability and sharing of public sector data. The overarching goal of such policies is to eliminate barriers to data access, encourage data reuse, and foster innovation by enabling citizens, businesses, researchers, and other organisations to utilise data for a wide range of purposes.

[1] Head of Data & Analytics, KPMG Baltics, E-mail: rnugis@kpmg.com
[2] Head of Digital, KPMG Baltics, E-mail: vriispapp@kpmg.com
[3] See overview of open data policies at https://www.epa.gov/data/open-data-policies#:~:text=Open%20Data%20means%20giving%20the,necessary%20to%20reach%20those%20goals.

Based on interpretations from various sources, open data policies and practices can be viewed through the following grouped dimensions:

- Institutions, which establish the link between high-level legal and strategic frameworks and the governmental and non-governmental organisations that influence policy formulation and direction;
- Influencers and implementers who support open data policies, including government-level decision-makers and regulators, as well as soft promoters such as think tanks and international networks dedicated to or closely related to the topic;
- Management of policy effectiveness, aimed at achieving a strategic development cycle. This includes setting policy targets, periodically monitoring progress, and implementing action plans to meet operational milestones within specific policy subdomains.

Through the diverse use of open government data, governments, businesses, and citizens can derive both direct and indirect economic benefits.

The United States was among the first countries to develop an open data policy. A key milestone was the Open Government Directive, signed in December 2009 under the initiative of President Barack Obama, which led to the creation of Data.gov, one of the world's first national open data portals. In 2018, the "Foundations for Evidence-Based Policymaking" Act was enacted, incorporating the OPEN Government Data Act, which mandates federal agencies to publish data in open and machine-readable formats.

The UK initiative is called the UK Government's Transparency Agenda of 2010, which resulted in the launch of *data.gov.uk*, and in 2015 the Digital Economy Act was passed, which enshrines approaches to the exchange and publication of data.

Australia adopted the Declaration of Open Government in 2010 and launched the portal data.gov.au. In 2011, systematic efforts to open data began at both federal and regional levels.

In 2011, Canada, New Zealand, and France adopted foundational concept documents. Other countries followed suit.

In Kazakhstan, the Law "On Access to Information" was adopted in 2015, and the Open Government initiative was launched in 2016. It soon led to the creation of five resources: Open Data, Open Legal Acts, Open Dialogue, Open Budgets, and the Assessment of the Effectiveness of Government Agencies. Each of these portals is intended to ensure that citizens can promptly access information about the work of the national government and local *akimats*.[4]

It should be noted that the EU has been assessing the maturity of open data since 2015. Maturity is measured across four dimensions: policy, portal, impact, and quality. Based on these dimensions, countries are grouped into four clusters: trendsetters, fast trackers, followers, and newcomers, from most mature to least. Based on the results, recommendations are provided that are tailored to the maturity level and characteristics of each of these groups.[5]

However, as practice shows, governments differ in their approaches to the provision and use of open data. In this context, analysing the open data practices of various countries becomes relevant, as it opens up opportunities for mutual learning. The aim of the article is to compare Kazakhstan's open data policies and practices with those of leading countries and to provide recommendations for their improvement.[6]

[4] The national equivalents of local governments in Kazakhstan.
[5] https://data.europa.eu/en/publications/open-data-maturity
[6] Within the project led by Astana Civil Service Hub.

The article consists of the following sections: an introduction to the concept of open data; an overview of open data policies and practices in Estonia, Canada, the European Union (EU), and Kazakhstan; an overview of open data policies and practices across several policy areas, including education, health, labour and social protection, environment, culture, and trade; and a set of recommendations.

METHODOLOGY

The main methods used to prepare this report included the study and analysis of information from open sources published by governments and relevant organisations, open data portals, as well as creative workshops with civil servants in Kazakhstan. In examining the political framework, the article draws on document analysis and comparative analysis. In the review of open data portals, the article incorporates user experience insights and other forms of business analytics. The evaluation of user experience is limited to specific perspectives, focusing on business users as the primary user group, and is presented in the form of a case study.

RESTRICTIONS

The article is limited in both its geographical scope and the components it addresses. Missing aspects include the interaction between public information policy legislation and other related laws, relevant case law, and the ongoing evolution of policy as reflected in (non-public) draft legislation and policy proposals at the time of information collection stated above.

RESULTS AND DISCUSSION

1. Open Data: Conceptual Framework

To understand what open data is, it is helpful to refer to a study conducted by the OECD (2019). In line with general OECD practice, their publications consider open data in conjunction with public sector information.

A term often used as a close equivalent to open data is *open government data*, which is regarded as a subset of public sector information. This refers to virtually all information "generated, created, collected, processed, stored, maintained, disseminated, or financed" by governments or government agencies. Such data is free to use, reuse, and distribute.

Reuse (of information, data, or documents) is defined as the use of documents held by public sector bodies or public sector enterprises by individuals or legal entities. Reuse is a situation where information collected or created by a government for the purpose of, say, governance is made available on demand (as public sector information) or, more proactively, made available for any kind of public use through a portal or API (as open data).

In this case, we call public sector information that is made available at the request of an organisation or individual **passively accessible**. Similarly, we refer to information that is provided through a web portal or API without a request as **actively available information**. Why do we use such distinctions? Because government data collection and data collection by companies like Google are fundamentally different. The link between them lies in the concept of open data reuse. This is where reuse emerges as a defining property of data. Unlike oil, which can only be used once, data can be reused indefinitely, and its value grows with the frequency of use, or the number of connections made to the dataset.

The OECD (2019) lists the following principles, which could also be described as characteristics of datasets published as open data: completeness, primacy, timeliness, accessibility, machine-

processable, non-discriminatory, non-proprietary. The beneficial impact of open government data on development is evident in the following areas:

- improving government accountability, transparency, responsiveness and democratic control;
- promoting self-development of citizens, social participation and involvement;
- educating the next generation of empowered civil servants;
- promoting innovation, efficiency and effectiveness in public services;
- creating value for the economy as a whole.

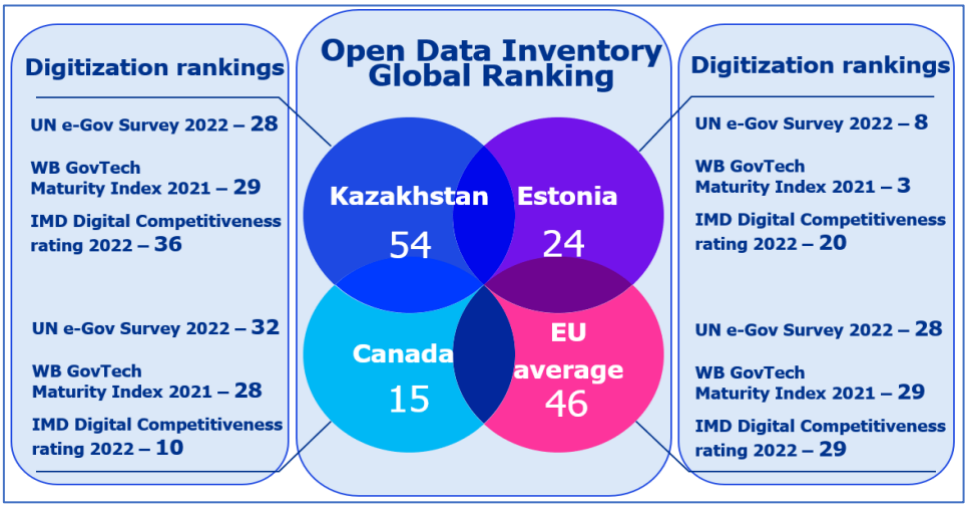
2. Kazakhstan in the Ranking

According to the Global Open Data Inventory Ranking,[7] published by the international non-profit organisation of data experts Open Data Watch, Kazakhstan out of 187 countries is in 54th place with a score of 62. For example, Canada is in 15th place in this ranking with a score of 76, Estonia is in 24th place with a score of 70, the average arithmetic score for the EU is 70, which places the Union between 45th (Ukraine and Uzbekistan) and 47th (Serbia) places (Figure 1). In this regard, all the jurisdictions examined have made some progress in developing their open data policies. However, Canada has been significantly more successful than the others.

There are other rankings that, while not focused specifically on open data, are still relevant to the topic—such as those measuring government openness and anti-corruption. However, none of these rankings provide a definitive assessment of policy effectiveness. As a result, different approaches are needed to more comprehensively evaluate the success of open data policies.

Kazakhstan has achieved notable progress among its neighbouring countries in the field of digital government. It has implemented a number of modern policy initiatives, placing it relatively high in regional rankings for digital government services.

Figure 1. A selection of public sector digitalisation rankings, including the arithmetic mean for EU Member States at the time of the study (2022).



3. Basic Concepts in the Law

In Kazakhstan, as in Estonia, access to public information is a constitutional right. Meanwhile, in the quasi-constitutional framework of the European Union—namely, the Charter of Fundamental Rights of the European Union—the right of access to documents is formulated

[7] https://odin.opendatawatch.com/Report/rankings?sortOrder=&appConfigId=8

more conservatively than the broader right to public information found elsewhere (see Table 1). Nevertheless, all four jurisdictions have primary legislation that enables them to implement public information policies.

Table 1. Constitutional provisions regarding access to public information.

Jurisdiction	Source	Ref	Review
KZ	Constitution	Art. 20 Art. 18	Right to receive information.
CA	Canadian Charter of Rights and Freedoms	Art. 2	Freedom of speech.
EE	Constitution	Art. 44	Right of access to public information. The right to access information about yourself.
EU	Charter of Fundamental Rights of the EU; Treaty on the Functioning of the EU	Art. 42 Art. 15	Right of access to documents. The authorities carry out their work as openly as possible. Right of access to documents.

For Kazakhstan, the Law "On Access to Information" (2015) is the primary legal document related to public sector information and open data. However, this law is structured somewhat differently from those in European countries and does not contain a dedicated introductory article outlining the purpose of the act. Nonetheless, it affirms the constitutional right of every individual to freely receive and disseminate information in any manner not prohibited by law.

It is worth noting that, while the European Union and Canada differentiate between the concepts of public information and open data, Kazakhstan's 2015 law distinguishes between the terms "information" and "open data". Information is defined as data about individuals, objects, facts, events, phenomena, and processes, recorded in any form. Open data refers to data presented in a machine-readable format and intended for further use or republication without modification.

At the same time, the Law (2015) sets out the rules for passive access to information (upon request), provided no legal restrictions apply. Active access to open data—meaning information proactively published for public use—is available through government agency websites, the national open data portal, and several thematic platforms, including the Open Budgets portal, the Open Legal Acts portal, and the portal for assessing the performance of government agencies.

4. Open Data Strategy

In the state programme "Digital Kazakhstan",[8] which was in effect until 2022, mentioned open data as one of the directions. In particular, it mentioned the open data portal, which also contains published datasets, legal acts and budget documents. The programme included a commitment to continue developing use cases for open data. This programme was then replaced by the "Technological Breakthrough through Digitalisation, Science and Innovation", an umbrella strategic development plan adopted in 2021.[9]

[8] Resolution of the Government of the Republic of Kazakhstan dated December 12, 2017, No. 827. On approval of the State Program "Digital Kazakhstan". Repealed by the Decree of the Government of the Republic of Kazakhstan dated May 17, 2022, No. 311. https://adilet.zan.kz/rus/docs/P1700000827 [In Russian]

[9] Resolution of the Government of the Republic of Kazakhstan dated October 12, 2021, No. 727. https://adilet.zan.kz/rus/docs/P2100000727 [In Russian]

The new strategy includes approximately 211 measures and 44 key performance indicators spanning a wide range of management areas with digitalisation potential. It promotes advanced Government-to-Business (G2B) and Government-to-Citizen (G2C) models—such as event-based and proactive services, as well as a real-time economy—and encourages the use of emerging technologies, including Big Data and AI applications. Although the strategy does not explicitly promote open data policies, a significant impact can be anticipated, as many of its planned implementations offer strong potential for open data use and applications.

Examples of initiatives within the new strategy that could support open data use cases include monitoring and inventory of the environment, natural resources, transport, energy, real estate, as well as satellite and spatial data.

The strategy was developed by the government, with key authors being the Ministry of Digital Development, Innovations and Aerospace Industry of the Republic of Kazakhstan (hereinafter referred to as MDIA) and the Ministry of Science and Higher Education of the Republic of Kazakhstan (hereinafter referred to as MSHE). Responsibility for implementing the 211 measures and achieving the 44 key performance indicators lies with various ministries, agencies, and state-owned enterprises operating within their respective areas of government.

It is worth noting that access to information is briefly outlined or mentioned in several other strategic documents, including the National Development Plan of the Republic of Kazakhstan through 2025.[10] It outlines the importance of access to information as a tool for reducing corruption.

5. Ecosystem

Several entities are involved in policymaking in the e-government domain, with the government serving as the primary policymaker for access to information and open data. The Ministry of Information and Social Development of the Republic of Kazakhstan (hereinafter referred to as MISD), empowered by the Law on Access to Information (2015), acts both as a policy developer and as an implementing body responsible for substantive policy matters and oversight of its execution. The MISD also plays a key role in promoting policy by encouraging government bodies to provide access to their information, publish open data, and ensure the relevance and accuracy of the data already made public.

The MDIA also participates in policy implementation, though with more limited powers focused primarily on the technical aspects. The MISD, as the lead executive body, establishes and consults a standing committee composed of government officials, members of parliament, and a wide range of civil society representatives, including human rights defenders, anti-corruption activists, organisations representing people with disabilities, associations of technology and data entrepreneurs, consumers, and researchers. The purpose of this committee is to represent the interests and needs of information users.

At the international level, at the time of information gathering Kazakhstan did not currently participate in any major permanent global forums on open government or open data, such as the Open Government Partnership.

While Estonia – among the jurisdictions considered – also does not participate in some of the better-known international forums, it benefits from a strong regional framework led by the European Union, which includes annual open data maturity assessments and various support,

[10] Decree of the President of the Republic of Kazakhstan dated February 15, 2018, No. 636. On approval of the National Development Plan of the Republic of Kazakhstan until 2025 and recognition of some decrees of the President of the Republic of Kazakhstan as invalid. https://adilet.zan.kz/rus/docs/U1800000636 [In Russian]

development, promotion, and investment initiatives. Canada, by contrast, is actively engaged in multiple international structures and plays a leading role in several of them on the global stage.

6. Execution

The operational implementation of the Law (2015), including its provisions on open data, is supported by a requirement for all government bodies to establish a dedicated unit or designate an official who effectively functions in a role akin to that of a data custodian in business-oriented organisations. This policy measure is similar to the Government of Canada's Open Government Directive, which assigns policy-related responsibilities to specific positions across government. A comparable provision exists in Estonia's Access to Public Information Act; however, unlike in Kazakhstan, the establishment of such a unit or official in Estonia is not mandatory.

The Law (2015) in Kazakhstan is further reinforced by provisions on personal liability and the potential imposition of administrative fines. However, the Law (2015) does not establish an independent authority with quasi-judicial, investigative, or enforcement powers. While administrative liability may apply in cases of violations of the right to access information, the enforcement mechanisms are not as robust as those in other jurisdictions. For instance, the Kazakhstani law (2015) does not provide for effective compliance incentives such as fines or imprisonment, as is the case in Canada, or penalties and effective redress mechanisms as required in EU Member States and established in Estonia.

Consequently, Kazakhstani law (2015) lacks an independent supervisory authority—such as the "redress authority" in the European Union, the Information Commissioner in Canada, or the Data Protection Inspectorate in Estonia. In practice, this absence means that denied access to information can only be challenged through the administrative chain of command or by initiating proceedings in a general court. Such denials may rely on grounds such as internal use or privacy concerns, without the possibility of swift verification of these claims by a trusted governmental oversight body.

7. Open Data portals

In the jurisdictions under consideration, an open data portal is understood as a widely adopted set of tools that provides proactive access to public sector information in a modern, digital format. Access to public sector information is further supported by the right to request information, as well as by the proactive publication of certain types of information on the websites of government organisations—types which are mandated by national legislation.

In Kazakhstan, several thematic open data portals are established as mandatory under the Law on Access to Information. These include "Open Budgets," "Open Dialogue," "Open Legal Acts," and "Open Assessments of the Performance of Government Agencies". In addition, there is also a government procurement portal.

8. The Process of Selecting Open Data

To understand the effectiveness of posting datasets on portals, it is necessary to consider national rules governing the publication of public information as open data.

Thus, different numbers of datasets are published across the open data portals of the jurisdictions considered. At the time of the study Kazakhstan's open data portal contained 3,748 datasets, while Estonia hosted 1,574, Canada had 11,145, and the EU portal featured 1,518,715 datasets. These figures are not directly comparable. Although the general criteria for classifying government information as open data are relevant across contexts, the

administrative approach of establishing a predefined list of datasets for publication is especially characteristic of Kazakhstan.

According to an order by the MDIA, datasets are compiled from government agencies, selected with the assistance of a special Commission on Access to Information. This Commission includes representatives of parliament and civil society. The data provided by these agencies is analysed to assess its suitability for publication as open data.

The analysis under consideration is carried out to assess whether the data have sufficient potential for publication as a dataset:

- faces access restrictions;
- is in demand (is of interest) among citizens and businesses;
- has a high technical readiness for publication as open data;
- is already being published, although not in machine-readable format.

Public demand is assessed through the analysis of past information requests, while business demand is determined through consultation with the Republican Association of Entrepreneurs.

The results of the analysis, including proposed datasets, are submitted to the MDIA and to the MISD, which holds administrative authority under the Law (2015). These results are then reviewed by the Access to Information Commission, which provides recommendations. Based on this process, the MISD compiles or updates a unified list of open data. This list is ultimately approved by a Government Decree.

9. Open Data Use Cases

Use cases are easy-to-understand implementation examples that the open data portals present to showcase and promote open data. A common source for use cases is the open data portals of individual countries, although these use cases are often available—and ideally should be available—as departmental, subject-specific, or regional open data resources.

At the time of the study, 37 mobile applications were published on Kazakhstan's open data portal. However, most of these applications did not function properly, which is also the case for the so-called "select" apps. Overall, 11 apps were *unusable* prototypes, 14 were dead apps, and only 12 were live apps. Most of the apps also had very short descriptions and very little contact information. Most of the apps were assigned a theme or category, such as "economics".

"GoSauda", a car trading platform, is a prime example of a successful portal use case. There is no information on the Open Data portal about *the open* data underlying the GoSauda app, but it is relevant and popular with more than 100,000 users in Kazakhstan.

"Kompra" is a completely different application designed to check the data of corporate partners. It can be assumed that it uses company data similar to the user experience test case described above, including the use of APIs. The app's website describes dozens of parameters that are used to check "business counterparties". Therefore, the application likely relies on much more than one Open Data source and is likely a combination of open and other data sources.

10. Directions for the Implementation of Open Data

To describe open data policies and their implementation in Kazakhstan, a survey was conducted. Among the participants of the seminars were officials from central and local government bodies responsible for the implementation of the Law (2015) and Open Data in relevant state administrations. To facilitate this, a co-creation session was held for each sunset

of officials using a group workflow, during which participants generated ideas for improving the effectiveness of open data implementation, assessed the ideas and provided insights in sets of simultaneous live surveys.

According to the survey participants, the most significant barriers to the development of open data implementation include: “lack of system data” among data owners, “low technical competence” of responsible personnel, and “lack of interest” at the management level. Additionally, there is reluctance among government agencies to accept additional obligations related to open data without motivational tools such as “additional remuneration”.

In the opinion of the participants, these obstacles could best be addressed by introducing more digital technologies, upgrading skills, providing monetary incentives to officials, improving the legal framework, attracting investment, and offering additional technical training to officials. Success in this context is measured by the number of completed projects.

Before the joint work on the topic of Open Data, participants rated their knowledge of Open Data highly, with most scoring their knowledge as 4 on a scale from 1 to 5 (indicating “high” knowledge). Moreover, the majority of participants in the subsequent survey rated the usefulness of open data as “high” or “very high”.

In terms of priorities, the top three criteria were “demand”, “goal”, and “relevance”. Since the explanation of “relevance” was similar to that of “demand”, these terms can be considered interchangeable.

To assess “relevance”, participants used measures such as expert input, questionnaires, web conferences, and research. “Target”, on the other hand, implies the publication of open data based on a prior agreement between policy stakeholders, which should be reached when discussing common policy priorities.

The top ideas for the practical implementation of open data that received support were “socially significant services and goods”, performance indicators of “public utilities and infrastructure services” like electricity and district heating, and data on “air quality”.

During the voting phase, participants largely disregarded the instructions to use the one-person-one-vote principle, with some voting for the same idea multiple times, taking advantage of the anonymous nature of collaborative creativity.

The results showed that one-third of those who voted rated the usefulness of open data as either average or high, while another third rated it as “moderate”. However, according to the word cloud, 30 participants emphasised that the most important areas of open data policy are transparency and freedom.

As for the priority ideas for the practical implementation of open data, these included data on “salaries of top managers”, “assets of public sector employees”, data on “prices for utilities in regions and districts”, and a database of “regulated prices for food products”.

However, when survey participants voted for the most significant barriers to open data implementation, “lack of barriers” came out on top.

“Lack of resources”, which manifested itself in improper delegation of functional responsibilities, came in second place. Third place went to accusations of “bureaucracy”, which manifests itself in a multi-stage approval requirement where higher-ups in the hierarchy must approve the publication of data.

The following places were taken by the problems of "integration of information systems, state control, market fluctuations and Pension Fund policy" and the opinion that "MISD" is a stumbling block.

Additionally, most survey respondents believed that the barriers identified would best be addressed by cracking down on senior government officials and voted to simply push forward with the idea of using apps to create digital products based on open data.

Surveys conducted among civil servants of central and local executive bodies revealed the following trends.

First, special attention was paid to the socio-economic situation in the country, and participants viewed open data as a possible set of tools for solving the relevant problems. Local government officials have been much more responsive to ongoing problems with utilities and rising prices for basic consumer goods such as food, which the government has tried to address with drastic measures such as price controls.

Secondly, research into the position of civil servants in central and local government bodies has shown the relevance of issues related to government transparency. They proposed ideas for initiating decisive measures to increase transparency and the need to reduce bureaucracy, abolish ministerial control over the publication of open data and increase the motivation of senior administrative management. Civil servants from both local and central governments voted for transparency as the top goal for achieving policies such as Open Data.

Finally, a significant number of civil servants voted for the "leave it as is" approach, suggesting a "no-obstacle attitude" that implied there were no significant barriers to successful implementation at the policy level and no need for change.

It is worth noting the importance of having an open data ecosystem that meets specific requirements for open government data, as this can be a sign of an ongoing value-creation process, indicating that the policy has been adopted and is becoming ingrained in society. Such ecosystems, by definition, will extend beyond government institutions and codified rules to include academia, media, the private sector, and civil society.

CONCLUSION

Based on the results of the comparative analysis, the following conclusions can be made.

1. In Kazakhstan, access to public information is a constitutional right. Kazakhstan is pursuing an independent policy related to public sector information in general and open data as an element of it, in particular. The Access to Information Law was passed in 2015 and the Open Government Initiative was launched in 2016.[11] Albeit the initiative launched a little later than in some of the reference countries, it established five resources: Open Data, Open Legal Acts, Open Dialogue, Open Budgets and Assessment of the Effectiveness of Government Agencies.
2. The Law (2015) is structured somewhat differently than in European countries and does not have a special introductory article describing the purpose of the act. However, it confirms the constitutional right of everyone to freely receive and disseminate information in any way that is not prohibited by law.
3. The European Union and Canada distinguish between the concepts of Public Information and Open Data, while Kazakhstani law distinguishes between the concepts of "Information" and "Open Data".

[11] https://open.egov.kz/

4. There is no independent supervisory authority in Kazakhstan, such as the Redress Authority in the European Union, the Information Commissioner in Canada or the Data Protection Inspectorate in Estonia. In practice, such absence means that a request for information can only be forcibly denied within the administrative chain of command or in a general court proceeding.
5. In Kazakhstan, as in other countries, data sets are sorted from government agencies, which are selected with the help of a special Commission on Access to Information. It is a body that includes representatives of parliament and civil society. Data from these government agencies is analysed and datasets for publication as open data are selected based on the results of the analysis. At the end, MISD forms or updates a single list of open data. However, the list itself is approved by Government decree.
6. A common source of use cases is each county's open data portal, although these are often available and should even be available as departmental, subject, or regional open data resources. At the time of the study, 37 mobile applications were published on the Kazakhstan portal. Of these, 11 apps were unusable prototypes, 14 were dead apps, and only 12 were live apps. Most of the apps had very short descriptions and very little contact information.
7. According to government officials, the most significant barriers to the development of open data implementation are: a "lack of system data" among data owners, "low technical competence" of responsible personnel, and "lack of interest" at the management level. Additionally, there is reluctance among government agencies to accept additional obligations related to open data without motivational tools, such as "additional remuneration". In their view, these obstacles can be best addressed by introducing more digital technologies, upgrading skills, offering monetary incentives to officials, improving the legal framework, attracting investment, and providing additional technical training. Success, according to them, is measured by the number of completed projects.

REFERENCES

Badiee, S., Crowell, J., Noe, L., Pittman, A., Rudow, C., Swanson, E. (2021). Open data for official statistics: History, principles, and implementation. *Statistical Journal of the IAOS,* 37(1), 139-159. doi:10.3233/SJI-200761

Darmenova, A, Mamykova, Zh., Andersen, K. (2020). Otkrytye dannye dvadtsatipyatiletnyaya istoriya razvitiya [Open data: twenty-five-year history of development], *NSUEM Bulletin*, 2, https://cyberleninka.ru/article/n/otkrytye-dannye-dvadtsatipyatiletnyaya-istoriya-razvitiya

EU (2023). Open Data Maturity Report 2022: Countries' perspectives on their open data policy, https://data.europa.eu/en/publications/datastories/open-data-maturity-report-2022-countries-perspectives-their-open-data-0

Law (2015). Law of the Republic of Kazakhstan dated November 16, 2015 № 401-V. On access to information, https://adilet.zan.kz/eng/docs/Z1500000401

Marr, B. (2015). A brief history of big data everyone should read. February 25, 2015. https://www.weforum.org/stories/2015/02/a-brief-history-of-big-data-everyone-should-read/

National Research Council (1995). *On the Full and Open Exchange of Scientific Data*. Washington, DC: The National Academies Press.

OECD (2019). *Enhancing Access to and Sharing of Data: Reconciling Risks and Benefits for Data Re-use across Societies*, OECD Publishing, Paris, https://doi.org/10.1787/276aaca8-en.

ACKNOWLEDGMENT

This article is devoted to increasing the potential of civil servants and specialists involved in the implementation of innovations in public administration and digitalisation of public services.

The authors express their sincere gratitude to Elmira Nurysheva, as well as to all government officials who took part in the creative seminars, and to government agencies for their support, assistance in preparing materials and conducting the research.

Special thanks are expressed to D. Seitkazin and G. Suleimenova for their valuable contribution to the preparation of the article based on the full research report.

The authors confirm that they have no conflict of interest.