

МЕМЛЕКЕТТІК БАСҚАРУ PUBLIC ADMINISTRATION ГОСУДАРСТВЕННОЕ УПРАВЛЕНИЕ

DRIVERS OF EFFECTIVE E-GOVERNMENT IMPLEMENTATION: TRAJECTORY OF KAZAKHSTAN'S E-GOVERNMENT RANKINGS

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Abstract. Countries around the world have realized the importance of e-government in making their services more efficient and readily available to citizens. Similarly, almost all countries are assessed and ranked by international organizations (such as the United Nations) on their level of e-government development. This paper examines the factors that determine effective e-government implementation and the trajectory of Kazakhstan's e-government rankings as recorded by the United Nations E-Government Survey (EGDI). The study found that Kazakhstan has consistently scored the highest EGDI among its Central Asian neighbors and has also performed well globally. While the trends are encouraging, Kazakhstan should develop clear strategies that address citizens' concerns about the use of e-government services. An important element of these strategies should be a shift in mind-set away from traditional closed systems to open systems kinds of policy development and delivery, that elicit higher public participation and economic innovation. In this way, the fuller potential of e-government could be realized.

Keywords: E-government, citizen's participation, information communication technology, good governance, Kazakhstan

Аңдатпа. Бүкіл әлемдегі елдер электрондық үкіметтің азаматтары үшін өз қызметтерінің тиімділігі мен қолжетімділігін арттыру үшін маңыздылығын түсінді. Осыған ұқсас, барлық елдер электрондық үкіметтің даму деңгейі бойынша халықаралық ұйымдармен (Біріккен Ұлттар Ұйымы сияқты) бағаланады және сараланады. Бұл мақалада Біріккен Ұлттар Ұйымының (EGDI) электрондық үкіметінің шолуында анықталғандай, электрондық үкіметтің тиімді енгізілуін және Қазақстанның электрондық үкіметі рейтингілерінің траекториясын анықтайтын факторлар қарастырылады. Зерттеу көрсеткендей, Қазақстан Орталық Азиядағы өз көршілерінің арасында EGDI-дің ең жоғары көрсеткіштеріне ие болып келеді, сондай-ақ бүкіл әлемде жақсы нәтижелер көрсетіп тұр. Үміт артатын үрдістерге қарамастан, Қазақстан Электрондық үкімет қызметтерін пайдалануға қатысты азаматтардың алаңдаушылығын ескеретін нақты стратегияларды әзірлеуі тиіс. Осы стратегиялардың маңызды элементі дәстүрлі жабық жүйелерден ашық жүйелерге ауысуы, қоғамның неғұрлым кең қатысуын туғызатын саясатты әзірлеу мен іске асыру түрлеріне қарай ойлауда ілгерілеу болуы тиіс. Осылайша, электрондық үкіметтің неғұрлым толық әлеуеті іске асырылуы мүмкін.

Түйінді сөздер: электрондық үкімет, азаматтардың қатысуы, ақпараттық-коммуникациялық технологиялар, тиімді басқару, Қазақстан

Аннотация. Страны во всем мире осознали важность электронного правительства для повышения эффективности и доступности своих услуг для граждан. Аналогичным образом, почти все страны оцениваются и ранжируются международными организациями (такими как Организация Объединенных Наций) по уровню развития электронного правительства. В этой статье рассматриваются факторы, которые определяют эффективное внедрение электронного правительства и траекторию рейтингов электронного правительства Казахстана, как это определено в Обзоре электронного правительства Организации Объединенных Наций (EGDI). Исследование показало, что Казахстан неизменно набирает самые высокие показатели EGDI среди своих соседей в Центральной Азии, а также показывает хорошие результаты во всем мире.

Несмотря на обнадеживающие тенденции, Казахстан должен разработать четкие стратегии, учитывающие обеспокоенность граждан по поводу использования услуг электронного правительства. Важным элементом этих стратегий должен быть сдвиг в мышлении от традиционных закрытых систем к открытым системам, видам

разработки и реализации политики, которые вызывают более широкое участие общественности. Таким образом, может быть реализован более полный потенциал электронного правительства.

Ключевые слова: электронное правительство, участие граждан, информационно-коммуникационные технологии, эффективное управление, Казахстан

Introduction

Electronic government (e-government) is the use of ICT (information communication technology) to enhance the competence, effectiveness, efficiency, and accountability of governments (Kumar, Sachan, & Mukherjee, 2017, Athmay, Fantasy, & Kumar, 2016). E-government consists of the use of ICT to exchange information; provide services; and transact with citizens, businesses, and other units of government (United Nations E-government Survey, 2016, 2014, 2012). E-government is therefore a strategic mechanism for transforming administrative activities in order to improve quality of service deliveries, cost savings in governance, and the effectiveness of government programs (Waheduzzaman & Miah, 2015).

Various countries have deployed different forms of e-government, however developed countries use more advanced forms of e-government models. For developing countries, adoption of e-government has the potential to promote civic engagement by empowering citizens to engage with government officials in a more transparent manner, thereby reducing the opportunities for corruption (Asogwa, 2013). Since it has always been argued that the modernization of public administration depends on the effective exploitation of new information flows in government (Hung, Chang, & Yu, 2006), this means that e-government has the potential to deliver better and more efficient governance. This view is widely shared by international institutions such as the Organization for Economic Cooperation and Development (OECD) and the World Bank, which explicitly promote transformational change in developing countries (Husin, Loghmani, & Abidin, 2017, Abdullah, Noor, & Ibrahim, 2016). This paper discusses the benefits of e-government and the major determinants of effective e-government deployments. The paper uses these as the springboard from which to analyze the trajectory of Kazakhstan's e-government rankings from 2008 to 2018.

Literature on benefits of e-government

The literature identifies numerous benefits of e-government. Some of these benefits include:

1. Delivering more integrated public services online through a single point of access (Athmay, Fantasy, & Kumar, 2016);
2. Bridging the digital divide so that all citizens are offered the same type of information and services from government (Alomari, Woods, & Sandhu, 2012);
3. Facilitating citizens' participation in the policymaking process by innovatively using ICT to provide access to policy information and solicit citizens' feedback (Asogwa, 2013);
4. Rebuilding customer relationships by providing value-added and personalized services to citizens (Weerakkody, & Dhillon, 2008);
5. Fostering economic development and helping local businesses to expand globally (Apulu, Latham, & Moreton, 2011); and
6. Creating a more participative form of government by encouraging online debating, voting and exchange of information (Deng, Karuasena, & Xu, 2018, Davison, Wagner, & Ma, 2005).

Based on the aforementioned benefits, governments around the world make every effort to ensure that their e-government strategies are effectively implemented. Some of the factors that enhance the effective deployment of e-government are discussed below.

Determinants of effective implementation

For government to effectively implement e-government and achieve the desired benefits, the following conditions need to be addressed.

Computer and internet self-efficacy

Computer and internet self-efficacy refer to a person's assessment of his/her ability to competently use computers and the internet in diverse situations (Hussein, Mohamed, Ahlan, & Mahmud, 2011). When citizens are more comfortable with using computers and the internet to achieve desired results, they are more inclined to use e-government services. Consequently, people who have high levels of computer and

internet self-efficacy are more likely to have positive views of e-government and use it frequently.

Technological infrastructure

Lack of key infrastructural facilities is a key constraint to the effective utilization of ICT in many developing countries. Ensuring significant improvements and growth in technological infrastructure is needed for effective e-government implementation (Husin, Loghmani, & Abidin, 2017, Deng, Karuasena, & Xu, 2018). This means that modernizing existing technological infrastructures and building new ones are important for effective e-government. In addition to modernizing the technological infrastructure, it is also important to ensure that subscription costs to access the internet are brought to a minimum in order to increase citizens' usage of e-government services.

Capable technological workforce

Lack of a skilled workforce in information technology affects e-government (Abdullah, Noor, & Ibrahim, 2016, Kumar, Sachan, & Mukherjee, 2017, Deng, Karuasena, & Xu, 2018). This is especially significant for developing countries where there is a lack of technological expertise needed for e-government. When a significant percentage of the population has limited experience in the technological infrastructures needed for e-government, it becomes difficult to effectively implement any e-government strategy.

Digital divide

The digital divide is the inability of certain segments of society to use the internet due to several reasons, such as age, income, geographical location, literacy levels etc. The impacts of the digital divide on e-government have been explored in various studies (Belanger, & Carter, 2008, Alomari, Woods, & Sandhu, 2012). Governments need to identify the various categories of the digital divide in their countries and develop measures that address them. Without addressing the issue of the digital divide, it will be difficult to effectively implement e-government in any country since most of the citizens will be unwilling to utilize such services.

Trust in the internet and the government

Lack of trust is a major factor that differentiates users and non-users of e-

government services (Amagoh, 2016). This can be due to internet fraud, the need to ensure privacy of personal information, etc. Stringent security features (such as public key infrastructure –PKI— and biometrics) will help increase citizens' trust in e-government (Schaupp, & Carter, 2010, Mpinganjira, 2015, Husin, Loghmani, & Abidin, 2017). Citizens will use more e-government services if they believe that the government will handle their personal online transactions in a faithful and confidential manner. Citizens are concerned about the ability of the government to protect their personal sensitive information. When citizens are assured that their personal information is well protected by public officers, they will be more willing to use e-government services.

Government policy/Legal and regulatory issues

Effective government policy is necessary to ensure successful implementation of e-government. Developing countries are faced with the task of establishing a legal framework that governs the utilization of ICT and evolves with changes that are caused by it. According to Kumar et al. (2017), legislative changes should include such features as electronic signatures, archiving data protection, preventing computer crimes and hackers, etc. (Kumar, Sachan, & Mukherjee, 2017). Government commitment at the highest level is required throughout the implementation and diffusion of e-government projects.

Public awareness/Public education

Citizens may not be aware of e-government and its associated benefits. It is imperative that government explains the importance of e-government to citizens (Athmay, Fantasy, & Kumar, 2016). Governments should embark on public information campaigns to promote e-government in order to increase greater citizen participation. Examples of such campaigns should include government-sponsored seminars and workshops, mailing newsletters, displaying posters and banners to citizens in public malls, television programs and advertisements, etc.

Attitudes and beliefs

According to Vassilakis et al. (2005), some citizens might be more interested in engaging with government through traditional means of interaction because of their negative attitudes and beliefs about the

usage of online services. Various studies have been conducted on the impacts of attitudes and beliefs over the usage of information technology, including the internet and government e-services (Persaud, & Sehgal, 2005, Vassilakis, Lepouras, Fraser, Haston, & Georgiadis, 2005, Venkatesh, Morris, Davis, and Davis, 2003).

Website design

User-friendly government websites with well-presented contents are important for citizens' adoption of e-government adoption by citizens (Husin, Loghmani, & Abidin, 2017, Alomari, Woods, & Sandhu, 2012). According to Kumar et al. (2017), accessibility and visual appeals are important considerations in building useful user-centered e-government services. When web-based e-government services lack citizen-centric features, some of the e-government benefits, such as fast access to government services and cost reduction, cannot be adopted by citizens.

Political self-efficacy

Political self-efficacy refers to the disposition of trust as a reflection of one's psychological perceptions based on his or her past experience with the government (Kumar, Sachan, & Mukherjee, 2017). Citizens who believe that their actions have an impact on government decisions are more likely to engage in e-government services, and vice versa. Thus, citizen's prior experiences when dealing with the government agencies have an impact on whether they will engage in e-government services. (Belanger, & Carter, 2008, Husin, Loghmani, & Abidin, 2017).

Social influence

Social influence refers to people's perception about whether those who are important to them think they should perform the behavior in question. Social influence is considered to be an important factor in explaining one's behavioral intention to use new technology such as e-government. According to Venkatesh et al. (2003), social influence affects usage intention because one may choose to engage in a behavior even if one is not favorable toward that behavior or the consequences. In other words, when e-government usage becomes the norm among most people in a particular group, it is more likely that other members of the group will use e-government services.

Trajectory of Kazakhstan's e-government ranking

The United Nations EGD (E-Government Development Index) measures a country's level of progress in e-government. The EGD is an aggregate indicator that measures a country's willingness and capacity to use information communication technology (ICT) in delivering public services (United Nations E-government Survey, 2018). The EGD is a weighted average that consists of three dimensions, namely: online service index, telecommunication infrastructure index, and human capital index. The EGD is based on a scale of 0 to 1, with 0 = least desirable score, and 1 = most desirable score.

Table 1: E-government Development Index for Central Asia from 2008 to 2018

Country Rank in Central Asia		Global Rank						EGDI Score					
Rank (2018)	Country	2018	2016	2014	2012	2010	2008	2018	2016	2014	2012	2010	2008
1	Kazakhstan	39	33	28	38	46	81	0.7597	0.7250	0.7283	0.6844	0.5578	0.4743
2	Uzbekistan	81	80	100	91	87	109	0.6207	0.5434	0.4695	0.5099	0.4498	0.4057
3	Kyrgyzstan	91	97	101	99	91	102	0.5835	0.4969	0.4657	0.4879	0.4417	0.4195
4	Tajikistan	131	139	129	122	122	132	0.4220	0.3366	0.3395	0.4069	0.3477	0.3150
5	Turkmenistan	147	140	128	126	130	128	0.3652	0.3337	0.3511	0.3813	0.3226	0.3262

Source: UN E-Government Survey (2018, 2016, 2014, 2012, 2010, 2008)

An examination of the trend of Kazakhstan's EGD I from 2008 to 2018 shows a consistent pattern of improvement in its rankings both globally and in Central Asia. The combination of the determinants of effective e-government deployment explained in the last section is likely responsible for Kazakhstan's sustained high EGD I rankings when compared to its Central Asian neighbors. Table 1 shows the EGD I of Central Asia countries from 2008 to 2018 and indicates that Kazakhstan consistently ranks first in e-government among its neighbors. The raw score has consistently increased from 0.4743 in 2008 to 0.7597 in 2018. While Kazakhstan's global ranking declined from 2016 (33rd position) to 2018 (39th position), the raw EGD I score increased from 0.7250 in 2016 to 0.7597 in 2018.

Table 2 depicts the three components that constitute the EGD I, namely: online

service index, telecommunication infrastructure index and human capital index. The Online service index is computed using a country's national website, including the national central portal, e-services portal and e-participation portal. In addition, the index is computed using the websites of certain ministries, such as, education, labor, social services, health, finance, and environment. The websites are evaluated for content and features, as well as for a minimal level of web content accessibility based on the Web Content Accessibility Guidelines of the World Wide Web Consortium (United Nations E-government Survey, 2018). For Kazakhstan's online service index, there was a decline from 0.7843 in 2012 to 0.7480 in 2014, with subsequent increases to 0.7681 in 2016, and 0.8681 in 2018.

Table 2: Kazakhstan's E-government Development Index and its Components from 2018 to 2008

Year	EGDI Value	Online Service Index	Telecommunication Infrastructure Index	Human Capital Index
2018	0.7598	0.8681	0.5723	0.8388
2016	0.7250	0.7681	0.5668	0.8481
2014	0.7283	0.7480	0.5749	0.8619
2012	0.6844	0.7843	0.3555	0.9134
2010	0.5578	0.1792	0.0593	0.3194
2008	0.4743*	0.3211**	0.1306***	0.9759

Source: UN E-Government Survey (2018, 2016, 2014, 2012, 2010, 2008)

*In 2008, EGD I was called "E-government Development Index".

**In 2008, Online Service Index was called "Web Measurement Index".

***In 2008, Telecommunication Infrastructure Index was called "Infrastructure Index"

The second component of the EGD I is the Telecommunications infrastructure index, which is a composite weighted average index of five primary indices that are: internet users/100 persons; main fixed phone lines/100 persons; mobile subscribers/100 persons; fixed internet subscriptions/100 persons; and fixed broadband/100 persons (United Nations E-government Survey, 2018). Kazakhstan's highest Telecommunication infrastructure index score of 0.5749 was achieved in 2014, with 2018 having a score of 0.5723.

The third component of the EGD I is the Human capital index, which is computed using the adult literacy rate and the combined primary, secondary and tertiary gross enrolment ratio of a country. Surprisingly, Kazakhstan's highest Human capital index score occurred in 2008 with a

value of 0.9759, even though it had the lowest EGD I score of 0.4743 in that same year among the years examined. Kazakhstan's second highest Human capital index was 0.9134 in 2012, followed by 0.8481 in 2016.

Another indicator that assesses a country's e-government is the E-participation index. The E-participation index comprises three components: e-information sharing (the use of the internet to facilitate provision of information by governments to citizens), e-consultation (interaction with stakeholders), and e-decision making (engagement in decision-making processes). A country's e-participation index value reflects how useful these three features are and how well they have been deployed by the government compared to all other countries. Kazakhstan had its highest e-participation index score of

0.9474 in 2012. It also had its highest e-participation ranking of the 2nd position globally in 2012. In 2018, Kazakhstan had a e-participation score of 0.8371 and ranking of 42nd position globally. Table 3 shows Kazakhstan's e-participation index from 2018 to 2008.

Table 3: Kazakhstan's E-participation index from 2018-2008

Year	Global Ranking	Score
2018	42	0.8371
2016	67	0.5932
2014	22	0.7647
2012	2	0.9474
2010	18	0.5571
2008	98	0.0909

Source: UN E-government Survey (2018, 2016, 2014, 2012, 2010, 2008)

The human and qualitative side of e-government

Nearing the close of this paper, it should be mentioned that, beyond its infrastructural and technical sides, e-government has a human side; which in turn has the potential to radically improve, indeed revolutionize, policy development and delivery. This involves a qualitatively different set of relations between citizen and state, and the means by which state agencies operate.

Traditionally, the operative paradigm was "government as administration" or "closed systems" of governance. This was appropriate for its day, when citizens had low human capital and were politically deferential; but in current times, when citizens are highly educated and capable, such a paradigm increasingly underperforms. Closed systems fail to harness the expertise, energy, and creativity that are present within modern societies. Consequently, governments are increasingly characterized by practices of "public sector entrepreneurship" (PSE) (Dhliwayo, 2017, Hayter, Link, & Scott, 2018) or by a shift from closed systems to open systems kinds of

policy development and delivery. In such cases, governmental agencies are designed as "learning organizations" (OECD, 2014), which recognize civic initiatives as a scarce but valuable resource (Dhliwayo, 2017) and try as much as possible to empower civic actors and the workforce (OECD, 2014) so as to create synergies among the state, civic, and private sectors. Thus, not only the content but also the process (inclusiveness, legal rights of the participants) of policy are important (Hayter, Link, & Scott, 2018). The mind-set of the public servant thus changes from managerial "expert" to that of "learner" (OECD, 2014). Understood and used properly, e-government could produce large gains of efficiency and satisfaction in public policy delivery. This topic deserves discussion in a separate paper.

Conclusion

This study identifies factors that drive the effective implementation of e-government and trajectory of Kazakhstan's e-government rankings from 2008 to 2018. The paper shows that Kazakhstan has consistently maintained a high position of e-government ranking among its Central Asian neighbors. The paper also indicates that the government of Kazakhstan has done well in addressing some of the factors that enhance effective e-government implementation, and this has helped the country to continually maintain and improve its e-government rankings. While great improvements have been made by the government in e-government, more efforts should be made in terms of having a citizen-centric approach in e-government policies. This includes adopting legislative and technological measures that encourage citizens to use e-government services with the assurance that their personal information is well safeguarded. The government should encourage ICT capacity development in the educational sector and integrate ICT programs into the educational curriculum. Clear strategies of open systems and learning organization design should be developed, that address citizens' concerns about the use of e-government services and thus achieve public policy synergies.

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