E-GOVERNANCE IN STATE INSTITIONS: EFFICIENCY, ADVANTAGES AND DISADVANATGES

CASE OF ARMENIA

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Abstract

Many governments currently turn their services into electronic ones to be able to provide services that are more efficient, transparent and diverse in using government services. Armenia is among the countries which adopted policies for the implementation and development of e-governance in state institutions. It actively started the e-governance practices in the 2000s. Moreover, taking into account that there are many pitfalls in the implementation of the e-governance in the state sector (such as the fact that various institutions are at different levels of e-governance implementation), the government adopted the new digitalization policy, which has the goal of creating effective, transparent, data-based governance, as well creation of a workforce with digital skills, ready for the digital economy. One of the cornerstones of the e-governance implementation is whether it is effective or not, and this study will explore the exact way state employees conceptualize e-governance tools implementation effectiveness in various ministries. In addition to this, the research will also explore the main advantages and disadvantages of these tools to understand what needs to be done to improve the e-governance practices of the state. State and government institutions as the units of analysis. Utilizing grounded research design theory, the study aims to derive or develop theories from systematically collected and analyzed data. Qualitative data gathering methods were employed, also integrating quantitative methods. Thematic analysis was utilized to interpret the qualitative data obtained through semi-structured interviews. The content of this paper includes literature review, background information, methodology, findings and conclusion.

Introduction

This study seeks to explore the perspectives of state employees on the effectiveness of e-governance tools and their perceived advantages and disadvantages. Centered on Armenian state institutions, the research aims to uncover employee attitudes towards the adoption and development of e-governance tools, while also identifying challenges and areas for improvement. Understanding e-governance necessitates a broad comprehension of governance itself. Scholars like F. Bannister and R. Connolly have examined various governance definitions, emphasizing the involvement of multiple stakeholders and the significance of formal and informal rules. Similarly, e-governance encompasses diverse interpretations, emphasizing the use of ICTs to enhance governance. Effectiveness assessments often focus on specific objectives, as outlined by C. Barnard in 1938, with different states utilizing various metrics, from service delivery facilitation to strategic constituency satisfaction. Research by Mahmoodi and Nojedehb illustrates the positive impact of e-governance tools, including improved service delivery and communication.

This research adopts a case study approach, focusing on Armenia's state and government institutions. Utilizing grounded research design theory, qualitative methods were employed, including face-to-face semi-structured interviews with state employees. Thematic analysis was conducted on transcribed interviews, supplemented by documents and articles. The study aims to fill gaps in research on e-governance implementation in Armenia, particularly regarding its effectiveness and associated pros and cons, with findings potentially relevant to e-governance practices in other contexts.

E-governance tools are recognized for their effectiveness across various dimensions, primarily focusing on cost-efficiency, time-efficiency, and innovation. During interviews, participants emphasized how these tools streamline processes, saving time and costs for both state workers and citizens. By reducing the need for in-person visits and cutting down on expenses like postal delivery and paper usage, e-governance tools are perceived as innovative, modernizing bureaucratic procedures and adapting them to technology. The surge in online government service usage during the COVID-19 pandemic was seen as a particularly positive outcome of e-governance.

Interviewees highlighted two key advantages of e-governance: democratic and technical. Democratic benefits include improved transparency, accountability, accessibility, and cooperation between citizens and the state. On the technical side, advantages such as quick responses to inquiries, simplified paperwork, and system flexibility were noted. While a few drawbacks, like internet dependence and technical glitches, were mentioned, interviewees believed these were temporary and resolvable.

Literature review

In order to clarify what e-governance is, let us first of all start with the definitions of governance in general. There are various definitions of Governance, F. Bannister and R. Connolly (2012:5) have examined the multiple definitions and come up with the most relevant ones, among them are the definitions by World Bank (WB) "*The exercise of political authority and the use of institutional resources to manage society's problems and affairs*" and the UN Public Administration Network (UNPAN) *"[Governance is] the exercise of economic, political and administrative authority to manage a country's affairs at all levels. It comprises the mechanisms, processes, and institutions through which citizens and groups articulate their interests, exercise their legal rights, meet their obligations and mediate their differences".* The authors point out that these definitions have common things: that governance has more stakeholders than mere governments and that governance deals with formal and informal rules that govern society.

E-governance also has different definitions, but we will consider the most applicable ones, which are; *"electronic governance, which is using information and communication technologies (ICTs) at various levels of the government and the public sector and beyond, to enhance Governance (* Uma O., 2000)", as well as by UNPAN *"E-governance can be defined as the application of ICT tools in (1) the interaction between government and citizens and businesses, and (2) in internal government operations to simplify and improve democratic governance."* (F. Bannister and R. Connolly, 2012:5).

To clearly understand what is meant by e-governance effectiveness, it is worth mentioning that effectiveness in this study is understood as measured by the interviewees (state employees), which will be presented in the findings. However, there are some widely accepted ways to measure e-governance effectiveness. Effectiveness is usually measured as follows; *"an organizational action would be effective if "a specific desired end is attained"* (C. Barnard 1938). In the case of e-governance efficiency, this study considered the reasons behind the implementation of e-governance tools by state institutions.

In terms of e-governance effectiveness, different states have different measurements, however, the academic discussion suggests several of them. R. Mahmoodi and S. Nojedehb (2016:139) present several models of e-governance effectiveness, these are; facilitating the process of offering services to citizens, preparing the accessibility of citizens, reducing the costs through integration, achieving accountability, transparency, goal model, system model, strategic-constituencies model (see table 1). The goal model suggests that e-governance tools are effective in case they accomplish the goals set by the exact institution/organization. System model is more about the tools and methods for reaching the goal. Last but not least, strategic-constituencies model suggests that the tools are effective if employees, users (citizens) and other parties are satisfied.

Model	Conceptualization of the organization	focus
Goal model	The organization as a rational collection of arrangements, which tend to reach the goals	Reaching and accomplishing the consequences (goals)
System model	The organization as an open system (input, change, and output)	Input and internal resources (tools and methods)
Strategic-constituencies model	The organization as the internal and external factors which negotiate and reach an agreement on a complicated group of obstacles and goals	Answering the expectations of constituencies groups who are within the organization
Competing values model	The organization as competing values which creates several conflicting goals	Three dimensions of competing values: internal focus vs. external focus, control vs. flexibility, goals vs. tools or methods
Ineffectiveness model	The organization as a group of problems and failures	Factors preventing from the successful performance of the organization

Table 1. Organizational effectiveness model
Source. R. Mahmoodi and S. Nojedehb (2016:139)

The authors found out that e-governance tools reduce the time spent on service delivery for state institutions, facilitates services receive, easier intra-organizational communications, reduces the costs of government organizations, facilitates the communications with users, and improve the quality of services.

Background information on Armenia

The government of RA actively started e-governance initiatives in 2000 (though digitalization itself has existed since 1990). In 2008 the RA adopted a program of actions for advancing the electronic governance system in Armenia. As a result, several initiatives have been created, such as the electronic governance system (e-gov. am), which has more than 20 services. The platform includes electronic services in the field of real estate (e- cadastre.am), state payments (e-payments.am), electronic registration of organizations (e-register.am), presenting tax reports (file-online.tax service.am), unified platform of electronic requests (e-request.am), for conducting construction work (e-permits.am), Unified electronic register of RA licenses (e-license.am). Another platform (e-rights. am) was created to improve the transparency and accountability of the work of the government in the field of human rights protection. The initiatives are supported by the state budget, European Union, United Nations, and World Bank. The digitalization process was decentralized; hence, different institutions have different levels of e-gov development and unequal process. An interoperability platform is being created to ease the process of data transfer between systems of different institutions. Armenia is the 68th among 193 countries in the development of electronic tools for public services, after Kazakhstan, Belarus, and Russia. Most of the citizens using e-governance tools is to get information from government websites. The digitalization strategy of RA (Arlis:2021) aims at effective and data-driven governance, making businesses more competitive through digital platforms and smart solutions as well as a public/employees able to use digital tools.

Research questions

Based on the already existing literature on the e-governance effectiveness is measured and whether it is or is not effective, the main research questions of this study are;

Research question 1. How do state officials conceptualize the effectiveness of e-governance tools in state institutions?

Research questions 2. What are the advantages and disadvantages of implementing e-government tools in state institutions, according to state officials?

Thus, though there exist various definitions and measurements of e-governance effectiveness (mentioned in the literature review), this study will identify the conceptualization of e-governance effectiveness by the interviewees.

Methodology

The following research is a case study, mainly concentrating on the case of Armenia, and the units of analysis are state and government institutions. The grounded research design theory was used, which is to discover or construct theory from data, systematically obtained and analyzed using comparative analysis (Chun Tie Y., Birks M., and Francis K.: 2019). The qualitative method of data gathering was used for this study (quantitative methods will be used in case it is necessary) because it is the most suitable method for answering the research questions, as Creswell J. (2013:47) mentions, qualitative research is conducted in order to have a detailed understanding about an issue, which can only be done with the help of talking to people and listening to their own explanations. Face-to-face semi-structured, key informant, in-depth interviews were conducted with the target groups (state employees). All the interviews were audio-recorded (with the written permission of interviewees), and later on, transcribed for thematic analysis. The interviews were conducted using purposive (quota) sampling (Babbie E. 2010:193), which means, that interviewees were chosen based on the role/association they had in the processes of e-governance initiatives. In addition to the interviews, various documents, articles and data were also used. Thematic analysis (which is a process of discovering, interpreting, and reporting patterns of meaning in the data (Ritchie, 2014:271) of qualitative data analysis was used while analyzing the raw data received with the help of semi-structured interviews. Overall, the empirical data was gathered through interviews, documents, articles. In order to ensure reliability and validity, statistical data from government websites were also used. To sum up, considering that there is still a lack of broad research on e-governance implementation in Armenia, especially on its effectiveness, advantages, and disadvantages, this study has tried to fill this gap, focusing only on Armenia. Despite the fact that the focus is only on one country, this research will help reflect on other cases of e-governance practices.

Results

This research, first of all, had the purpose of examining e-governance tools implementation in the state institutions of Armenia, more specifically, how do state employees conceptualize the effectiveness. In addition, the study also aimed to understand the advantages and disadvantages of e-governance tools implementation, again, from the perspective of the state workers. In an effort to present the findings properly, the analysis is divided into several sections; *a) effectiveness of e-governance tools usage, b) advantages of e-governance tools usage, c) disadvantages of e-governance tools usage d) other results.*

Effectiveness of e-governance usage

Due to the detailed examination of the websites of the ministries as well as interviewing the state representatives, it turned out that there are several electronic platforms used by all the ministries, such as Mulberry, e-request.am, however, there are plenty of platforms that each ministry uses for providing its own services which are not used the rest of the state institutions (see table 2). These tools are all implemented by EKENG (e-Governance infrastructure implementation agency) which is funded by the Government of Armenia and works according to the constitution of the country. EKENG is the system operator and aims to facilitate citizen's communication with the state (www.ekeng.am).

Electronic tools used by each ministry	
Ministry of Health	Mulberry electronic document transaction system, Armed, RA external health national single window project, e-request, e-draft.am, Arlis.am, Azdarar.am
Ministry of Emergency situation	Mulberry, e-draft, mes.am, e-gov.am, e-request.am
Ministry of education, science, culture, and sport	Mulberry, e-request.am (and other)
Ministry of Social and Labour Affairs	Mulberry, e-request.am (and other)
Ministry of Economy	Mulberry, e-draft, datalex.am, e-register.am, elections.am, parliament.am, gov.am, arlis.am, e-invoicing, tax-service.am, register.statepropery.am, armeps.am, PPCM.am, e-auction.armeps.am, cso.gov.am,
Ministry of High Tech Industry	Mulberry, e-request.am (and other)

Ministry of Justice	e-justice, e-court, e-bankruptcy, e-notary, E-System of Compulsory Enforcement Service, Mediation, Archive, e-register, ARLIS, e-criminal case, e-recruitment, e-probation, e-penitentiary system, DAHK, Mulberry, e-request.am
Ministry of Environment	Mulberry, admin.gnumner.am, armeps.am, armeps.am, eauction.armeps.am, file-online.taxservice.am, e-invoice.taxservice.am, Client Treasury, erepo.gov.am
e-Tools managed by EKENG	Approximately 240 services

Table 2. Electronic tools used by each ministry
Source: Author

The interviewees from all the state institutions confirmed that the e-governance tools had positive effects on the daily work of these institutions, especially in terms of the work with citizens. According to the replies, there can be three main thematic categories of how they conceptualize the effectiveness of these tools; *cost-efficient, time-efficient and innovative* (table 3). Let us discuss them one by one; most of the interviewees highlighted that the more e-governance tools are being used by the citizens and the employees, the less the institutions are paying for expenses such as postal delivery (since most of the replies to the citizen's requests are also being sent via post), the number of paperwork decreases, which means that the money spent on buying paper also decreases. Moreover, even though this study did not explore the perspective of the citizens, many interviewees have mentioned that these tools are cost-efficient for the citizens as well, as they don't spend money on travel to and from the state institutions and so on. In terms of time, most of the interviewees mentioned the usage of these tools is effective as it allows them to save time; first of all, because instead of the citizens visiting the ministries, the employees receive electronic requests and respond to these requests quickly, no need to accept citizens in person. The employees have less bureaucracy to deal with, or at least these tools made it easier. In addition, electronic tools make the work of the state institutions more innovative, for example, transfer from paper to a digital one, more effective bureaucracy to deal with, as well as more efficient when it comes to emergency situations. For example, the representative of EKENG specified;

"We can measure the effectiveness of e-governance tools by looking at how often the citizens use them. For example, during COVID19, the number of citizens using e-governance tools was increased…"
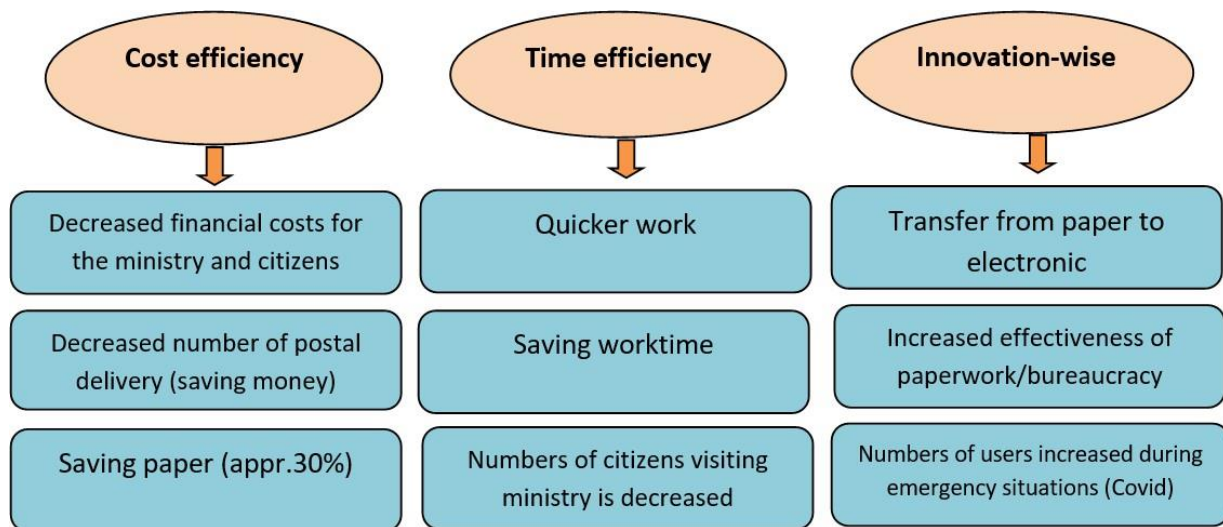*EKENG representative*

Cost efficiency	Time efficiency	Innovation-wise
Decreased financial costs for the ministry and citizens	Quicker work	Transfer from paper to electronic
Decreased number of postal delivery (saving money)	Saving worktime	Increased effectiveness of paperwork/bureaucracy
Saving paper (appr.30%)	Numbers of citizens visiting ministry is decreased	Numbers of users increased during emergency situations (Covid)

Table 3: Conceptualization of effectiveness of e-governance tools
Source: Author

Some of the interviewees stated that except from being effective, conceptualized as time-saving, cost-effective, and innovative, these tools also increase the professionalism of the employees, as they get trained and obtain new skills relevant to the 21st century's fast-growing world.

The advantages and disadvantages of e-governance usage

However, like all the other things, these tools also have their advantages and disadvantages. As a result of the interview analysis, it turned out that most of the employees mentioned the profits of the e-governance tools usage and the disadvantages, though they exist but are not significant enough to hinder the usage. It was mentioned that e-governance implementation had created advantages both for the state employees and for the citizens. The results of this study can be divided into two bigger categories, advantages in terms of *advancing democracy* and advantages in terms of *improving technical components* of the daily work. It was mentioned that these tools made the work of state institutions more transparent, as the citizens can see most of the things on online platforms. The citizens have more access to all types of information and service provided by the state. Moreover, the government is more accountable as it provides services online that are transparent and can also be easily held accountable in case something goes wrong, as all the details are visible to all the parties. It is worth mentioning that electronic tools make the cooperation between the state and citizens more frequent. From the technical point of view, it was mentioned that some of the advantages are system flexibility, quick replies, and easier paperwork for the citizens. Interviewees also said that due to these electronic tools the worktime becomes more purposeful, and more results are being obtained in less time (see table 4).
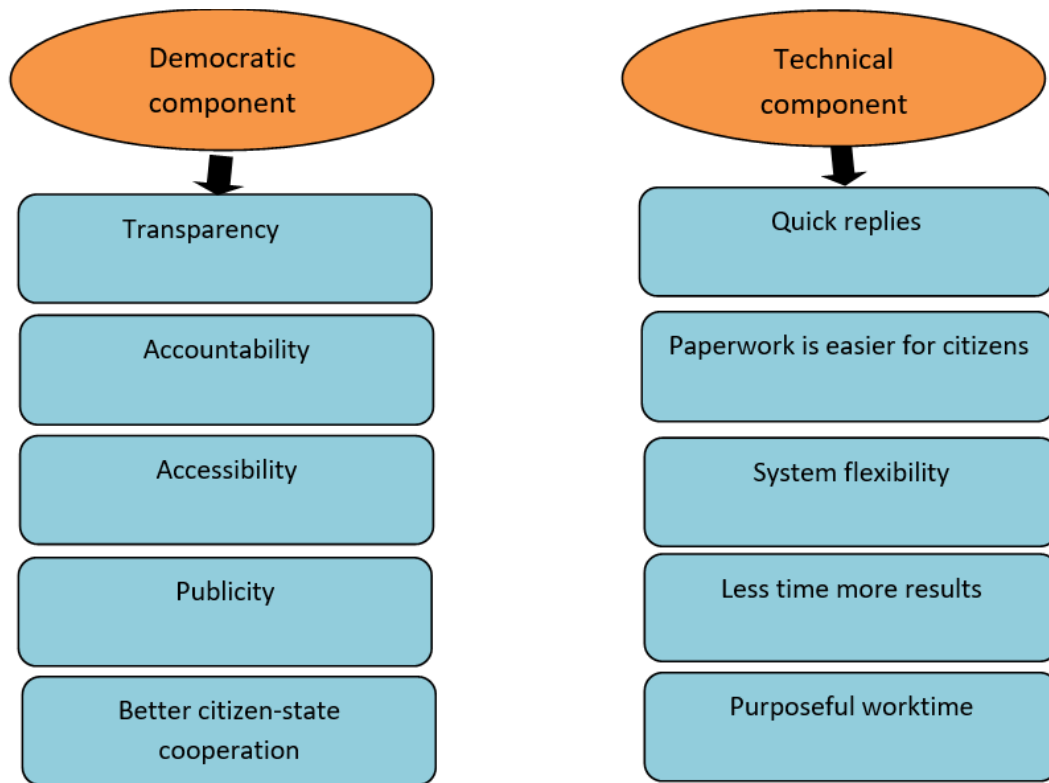
Democratic component	Technical component
Transparency	Quick replies
Accountability	Paperwork is easier for citizens
Accessibility	System flexibility
Publicity	Less time more results
Better citizen-state cooperation	Purposeful worktime

Table 4: The advantages of e-governance tools usage
Source: Author

Even though interviewees were keener on presenting the positive sides of the e-governance tools implementation, there were several crucial points mentioned that should be taken into account for the improvement of these tools in the future. First of all, as the system completely depends on the internet, once there is a low connection of a failure of connection, the work is disrupted, thus, affecting on the quality of services. This means that the government should think of more secure and alternative ways of internet access for state institutions. Then, the system may be overwhelmed and not work smoothly, again causing disruption in the daily work. There can also be technical disruptions, which can cause problems in accomplishing the work on time. Moreover, some of the interviewees mentioned that because of these tools, the interactions of the employees among each other and between the teams in general (see table 5). The pitfalls mentioned by the interviewees are not the complete list; however, they express the main concerns by representatives of almost all of the ministries, and if addressed, the development of e-governance in Armenia can be smoother and more effective.
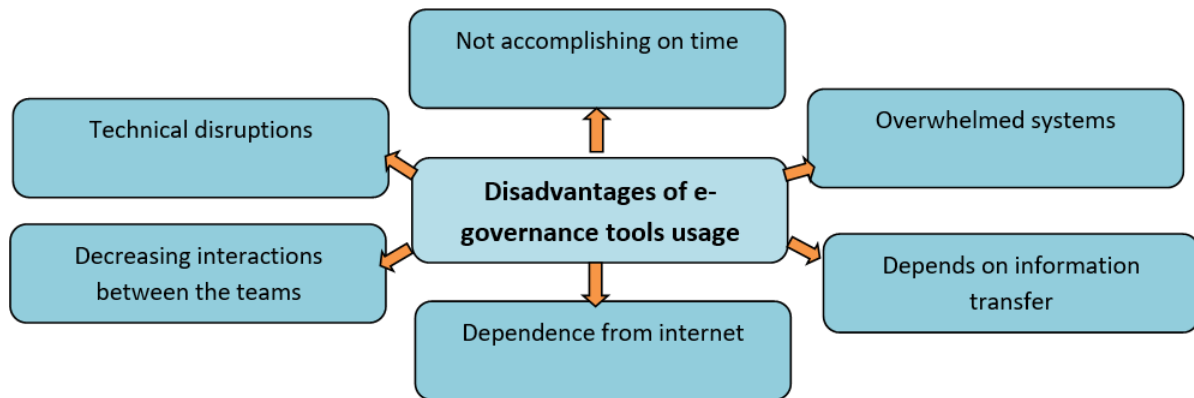
Table 5: What are the disadvantages of e-governance tools usage?
Source: Author

Other findings

For a successful e-governance implementation, it is also crucial that both the public servants and the citizens are able to use these tools appropriately. To the question of whether the employees are able to use these tools properly, most of the interviewees said that the employees use the tools professionally, especially after receiving proper training; the employees are occasionally asked to reflect on how the tools functions. Even though the interviews were conducted only with state representatives, they provided some information about the usage of the tools by citizens, some mentioned that youngsters use them more, some of them said that sometimes elders are better at using the tools. It was also mentioned that even though employees and citizens are able to use these tools properly, but there is still a space for improvement, the same refers to the quality of the tools. The Ministry of Social and Labor Affairs (MSLA) highlighted;

"Since most of the beneficiaries of the ministry are elderly and people with disabilities, very often these tools are not used by them, but others use for them."
Zaruhi Manucharyan, MSLA,

The representative of the Ministry of High-Tech Industry (Arshak Kerobyan) states that some tools, for example, e-citizen, is not that useful because it is not very accessible. For example, it should be allowed to be put on the phone; currently the ministry works on that. The ministry is going to create a center of cyber security, which will create an open data policy, to understand which data is open to the public and which is not. These open data will have other functions/tools

to make them usable for other reasons. In addition, the interviewees mentioned that;

"If not, the whole state system is reformed, only one part, then it does not work well. All state institutions should be changed equally-in parallel. The changes will not be very fast but also not very slow, in two years or so."

Others also highlighted that there are ongoing reforms and these tools are going to improve. For example, the interviewees from the Ministry of High-Tech Industry said that the ministry currently creates a digital identification policy; currently, it is via ID card, but they want to make it easier and accessible, without any additional payment, as currently, citizens pay 3000 AMD for a digital signature (for a year). The interviewee from the Ministry of Education, science, culture, and sport said that a National Center for educational technologies also deals with the implementation of electronic tools in the education system. What refers to the reforms and more effective e-governance, the representative from the Ministry of Justice mentioned that;

"The citizens should be digitalized so that these tools can be served effectively, and the mentality should be changed, as they need to trust the e-governance tools."

Serzh Rushanyan, Ministry of Justice

The interviewee from the Ministry of Justice also informed that due to the electronic tools, the ministry is able to monitor the work of various branches and see whether employees do the work on time or not. The ministry is currently working on improving the previously existing electronic tools as well as creating new ones. For example, the E-justice system will serve as an umbrella system for all the other systems (see Annex 5). The ministry works cooperate with the European Union, United Nations Development Programme, German Foundation for International Legal Cooperation (IRZ), World Bank and European Investment Bank.

It is worth mentioning that all the above-mentioned ministries work with EKENG both for the implementation and improvement of electronic tools, as it is the system operator (over 240 services are being offered by EKENG). The interviewee from EKENG mentioned that the system works well if government works collaboratively, mentioning that;

"e-governance tools are effective if several factors are taken into account, such as; it's based on the government collaboration platform."

Alvard Simonyan, EKENG

As one of the interviewees (from EKENG) said that they conceptualize e-governance effectiveness also with the number of people who have used these services, the website of e-rquest.am, which is one of the crucial electronic tools used by all the state institutions (including the Yerevan Municipality from 2022) provides open data on the number of requests. For example, the number of people who have sent requests through this platform was 150,000 as of April 2022. These data are interactive, and soon, the visibility will also be improved on the website (see figure 1).

ՄԵԿ ՏԱՐՎԱ ԸՆԹԱՑՔՈՒՄ ՈՒՂԱՐԿՎԱԾ ՆԱՄԱԿՆԵՐԻ ՔԱՆԱԿԸ՝ ԸՍՏ ՀՀ ՄԱՐԶԵՐԻ ԵՎ ԵՐԵՎԱՆ ՔԱՂԱՔԻ
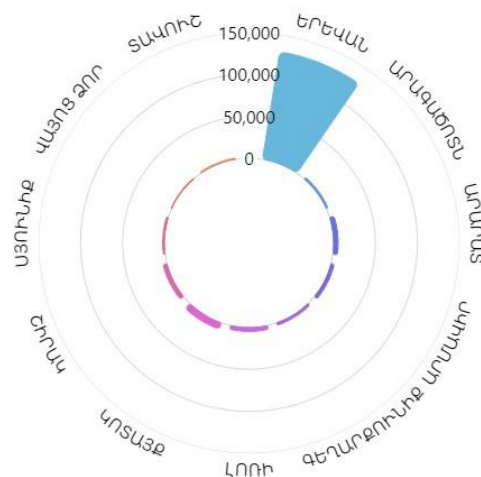
ՈՒՂԱՐԿՎԱԾ ՆԱՄԱԿՆԵՐԻ ՔԱՆԱԿԸ ԸՍՏ ՕՐԵՐԻ

Figure 1. The number of requests sent during a year in Yerevan and the regions
Source: e-request.am (retrieved on April,2022)

The daily number of requests can also be traced through the website (see figure 2), and as it can be noted from the figure below, the daily number ranges from 400 to 600 with no drastic changes. This is neither very high nor low results taking into account that there is still a need for more campaigns on the usage of these tools as well as internet literacy and access of the citizens should be improved.
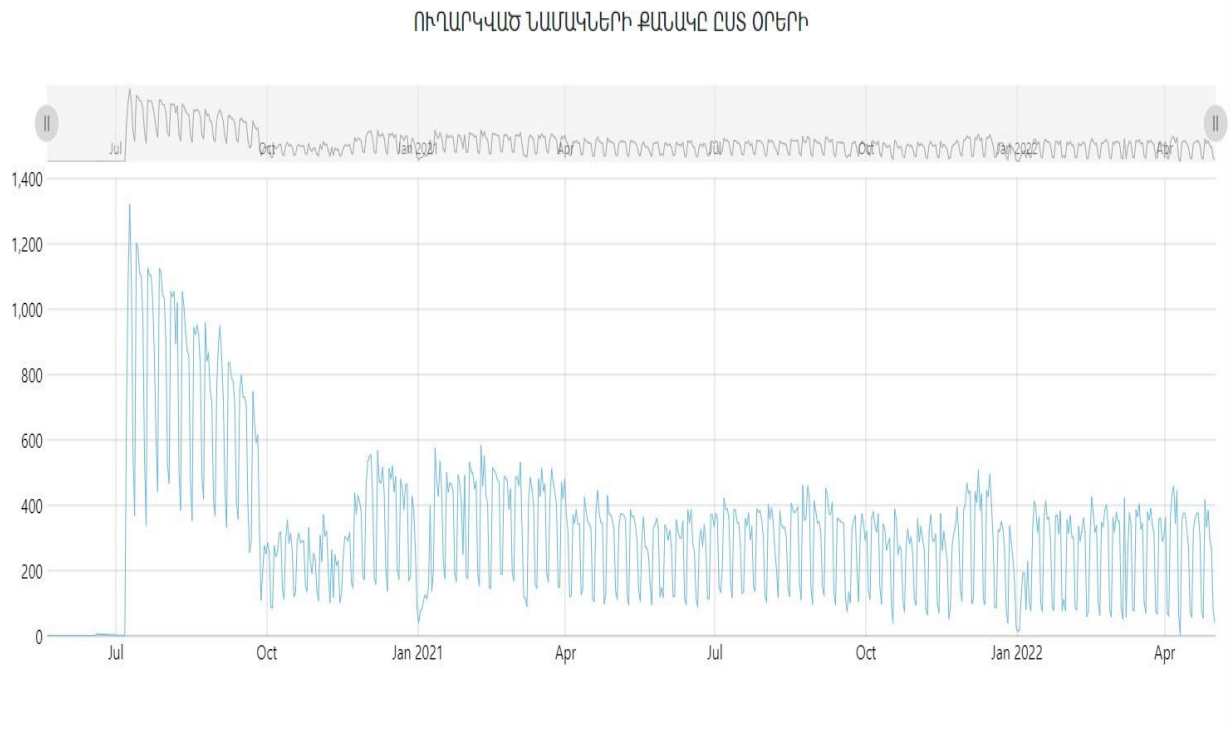
ՈՒՂԱՐԿՎԱԾ ՆԱՄԱԿՆԵՐԻ ՔԱՆԱԿԸ ԸՍՏ ՕՐԵՐԻ

Figure 2. The daily number of requests
Source: e-request.am (April, 2022)

In terms of institutions that receive most of the requests, the website of e-request also provides information (see figure 3). Here it is illustrated that the institutions with the most requests are the police, then comes the MLSA, Compulsory Enforcement Service (Ministry of Justice) and the office of the Prime-minister. The data on the types of the services used is also provided, where it can be noted that 77% are the applications, 11.69% are requests, 7.20 complaints, and 4.58% are others. As the data is interactive, the exact numbers and percentages can be seen on the website by clicking on the pictures.
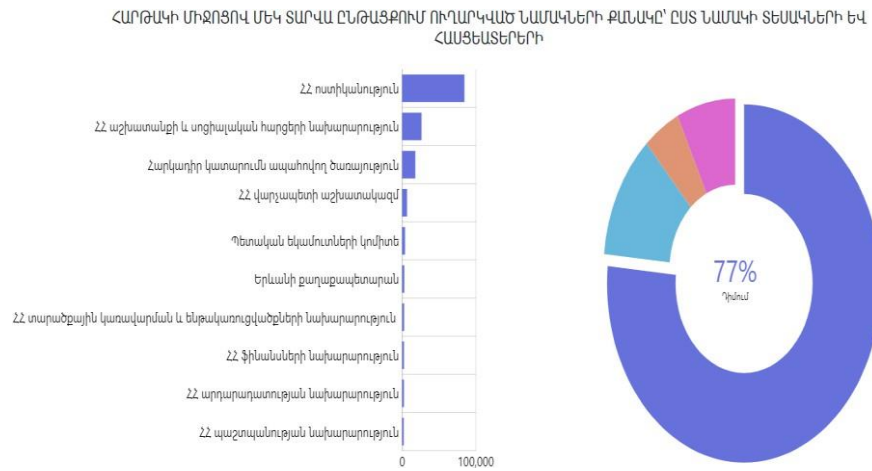
ՀԱՐԹԱԿԻ ՄԻՋՈՑՈՎ ՄԵԿ ՏԱՐՎԱ ԸՆԹԱՑՔՈՒՄ ՈՒՂԱՐԿՎԱԾ ՆԱՄԱԿՆԵՐԻ ՔԱՆԱԿԸ՝ ԸՍՏ ՆԱՄԱԿԻ ՏԵՍԱԿՆԵՐԻ ԵՎ ՀԱՍՑԵԱՏԵՐԻ

Figure 3. The number of requests sent during a year according to the state agencies and forms
Source: Author

Conclusion

E-governance implementation has different impacts and development ways in various countries. In some countries, it has helped to improve public service practices and citizens; in others, it had a little positive impact. That means that the effectiveness, pros, and cons of e-governance tools can vary from place to place. The overarching aim of this study was to find out how the state employees conceptualize the effectiveness of these tools and what they consider advantages/disadvantages. To results of the qualitative research showed that the state employees have positive attitudes toward the implementation and development of e-governance tools in the state institutions of Armenia, though there is still a need to work on the existing pitfalls and factors which make these tool-less effective than it could be, for example, making the citizens more aware of these tools, more e-literate, providing internet access to the places where it is not so accessible, as well as changing the citizen's mentality to create trust towards the e-governance tools.

The effectiveness of e-governance tools was conceptualized in considerable ways, the most common ones of which were divided into three different categories they are cost-efficient, time-efficient, and innovative. Most of the interviewees consider that these tools save time both for the state workers and citizens, first of all, because people are not visiting the state institutions in person, and employees don't need to meet and serve each person separately. Then, these tools also save money, again, both for the state institutions and citizens, since there is no need for additional expenses such as postal delivery, paper, transportation, and so on. Last but not least, e-governance tools are innovative, as they transfer the work from paper to technology-based, which eases the bureaucratic work. In addition, it increased the usage of government services via online platforms, especially during COVID, which is considered one of the positive sides of e-governance. The study also demonstrated that the advantages of e-governance, according to the interviewees, were divided into two big components, democratic and technical. For the first component, the main advantages that e-government brings are transparency, accountability, accessibility, publicity, and better cooperation between the citizen and the state. It also has advantages in terms of technology, for example, quick replies to the citizen's inquiries, easier paperwork, a flexible system and so on. It is interesting to note that most of the interviewees mentioned very few disadvantages and were quite sure that these are only short-term ones and can be easily solved; moreover, it is currently in the process. The main disadvantages were dependence on the internet, technical disruptions, decreased interaction between the teams, as well as that systems, can sometimes be overwhelmed.

The overall picture of the e-governance implementation in Armenian state institutions seems to be a very promising and developing process; it has already become part of the daily work of the employees, who professionally and more efficiently accomplish their tasks. It saves time and money and makes the state institutions innovative, which allows them to walk hand in hand with the technologically developed world. However, it is recommended to create better conditions for the citizens to use these services, such as internet access, to raise awareness, which will, in its turn, increase the trust in these institutions. It is also recommended for the government to create a

more secure environment for employees to work with electronic tools, meaning that the risks of internet connection and other types of technical disruptions are minimized.

Even though this study aimed at presenting the opinions of the state workers, there still is a need to understand the perspective of the other side, the citizens, who are the main stakeholders of the offered services; this is one of the limitations of the research and a recommended topic for future research.

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Annex 1. Key-informant interview questions

Questionnaire

1. When did Ministry first implement e-governance tools?

2. What kinds of tools were they?

3. Did the employees need additional training for the usage of these tools? If yes, what training?

4. Why did the Ministry of High-tech Industry decide to implement new e-governance tools?

5. What kinds of advantages and disadvantages can you mention about these tools?

6. Do you think more e-governance tools should be introduced? If yes, what kinds of tools?

7. What do you think of citizens' perceptions of the implementation of e-governance tools by the ministry?

8. How do you think these tools have changed the way Ministry works? (positive, negative)?

9. Did these tools make the work of the Ministry easier? If yes, how? If not, why?

10. Do you have any recommendations on how to improve these services?

Annex 2. List of interviewees

- Ministry of Health- Vahe Hakobyan, assistant to the secretary in chief
- Ministry of Emergency situation- Gohar Khanvelyan, department of information and external affairs
- Ministry of education, science, culture and sport (department of human resources)
- Ministry of Social and Labour Affairs- Zaruhi Manucharyan, speaker
- Ministry of Economy-Armine Kharatyan
- Ministry of High Tech - Arshak Kerobyan, Head of Digitalization Department at Ministry of High Tech Industry
- Ministry of Justice - Serzh Rushanyan, advisor to the minister
- Ministry of Environment

- Ekeng (e-governance infrastructure implementation agency)- Alvard Simonyan, project coordinator

Annex 3. Creating codes and categories

Example

Demographic group *Key-informant interviews with state representatives of RA*	Number of institutions 9	
Research questions *- How is the effectiveness of e-governance tools implementation conceptualized by government officials ?* *-What are the advantages and disadvantages of e-gov tools ?*		
Summary	**Codes**	**Defining/naming themes**
E-governance in state institutions of the RA		
Ministry of Health (Vahe Hakobyan-assistant to the secretary in chief)		
Mulberry electronic document transaction system	effective usage after training	
Armed information system of electronic health		
RA external health national single window project		Advantages
Electronic request united platform "e-request"		Accessibility publicity accountability transparency
Legal acts publication united platform "e-draft.am"	Accessible	
Armenian legal information system "Arlis.am"	rational	
RA public information system "Azdarar.am"	dependence from internet	Disadvantages
Employees effectively use these tools after the trainings	publicity	dependence from internet
Armed is used by ministry employees, medical	accountability	

Annex 4. Creating larger thematic categories out of the codes

Bigger categories (effectiveness)

Time-efficient	Cost-efficient	Innovative
Quicker work, saving worktime, numbe rof citizens visiting the ministry os decreased	Decreased financial costs for the ministry and citizens, decreased number of postal delivery, daving paper	Transfer from paper to electronic, Increased effectivenes of paperwork/bureaucracy, number of users increased during emergency situations

Bigger categories (advantages)

Democratic component	Technical component
Accessibility, transparency, accountability, better citizen-state cooperation, publicity	Citizens work is easier, paperwork is easier, system flexibility, quick replies, innovation, purposeful worktime, less time, more results, Increased electronic requests

Annex 5. Digitalization scheme of the Ministry of Justice

E-Justice	E-Bankruptcy	E-Notary
E-Court 1.վճռման կարգադրությունների մոդул 2. քաղաքացիական 3. սնանկության 4. վարչական 5. քրեական 6. մակագրություն		
	E-System of Compulsory Enforcement Service	**Mediation**
	Archive	**E-register**

E-Penitentiary system	E-Probation **Development of electronic medical system** -	E-Criminal case E-Recruitment	ARLIS