TALLINN UNIVERSITY OF TECHNOLOGY
School of Information Technologies

Elmira Kumarbekova 194251IVGM

Perspectives of Implementing Proactive Public Services in Kazakhstan

Master's thesis

Supervisor:	Innar Liiv, Ph.D
	Associate Professor
Co-Supervisor:	Mahtab Shahin
	MSc

Tallinn 2021

TALLINNA TEHNIKAÜLIKOOL

Infotehnoloogia teaduskond

Elmira Kumarbekova 194251IVGM

Proaktiivsete avalike teenuste rakendamise perspektiivid Kasahstanis

Magistritöö

Juhendaja:	Innar Liiv, Ph.D
	Associate Professor
Kaasjuhendaja	Mahtab Shahin
	MSc

Tallinn 2021

Author's declaration of originality

I hereby certify that I am the sole author of this thesis. All the used materials, references to the literature and the work of others have been referred to. This thesis has not been presented for examination anywhere else.

Author: Elmira Kumarbekova

10.05.2021

Abstract

The current thesis has shown that implementing proactive public service provision in Kazakhstan could be reached when certain prerequisites are met. The results demonstrate that the transition to proactive public service provision requires an integrated approach from the government. The current thesis aims to determine how proactive public service provision could be implemented in Kazakhstan. The thesis investigates the perspectives of implementing proactive public service provision in Kazakhstan, thus focusing on current achievements and possible obstacles. Based on a literature review on proactive service provision and theories on technology acceptance, quantitative and qualitative analysis was carried out. The results indicate that it is essential to improve the quality of public service provision in Kazakhstan. On this basis, it is recommended to implement service design and increase user-centricity in public service provision in order to enhance the quality of current public service provision in Kazakhstan.

Keywords: E-Governance, Proactive Public Service, Service Design, Public Service Quality, Life Events, Kazakhstan

This thesis is written in English and is 69 pages long, including 5 chapters, 18 figures and 3 tables.

Annotatsioon

Proaktiivsete avalike teenuste rakendamise perspektiivid Kasahstanis

Käesolev magistritöö on näidanud, et Kasahstanis on võimalik rakendada ennetavat avalike teenuste osutamist, kui on täidetud teatavad eeldused. Tulemused näitavad, et üleminek proaktiivsetele teenustele nõuab valitsuselt integreeritud lähenemisviisi. Käesoleva magistritöö eesmärk on määratleda, kuidas proaktiivsete teenuste osutamist oleks võimalik Kasahstanis rakendada. Lõputöö uurib Kasahstani avalikus sektoris proaktiivsete teenuste kasutuselevõtu perspektiive, keskendudes praegustele saavutustele ja võimalikele takistustele. Baseerudes proaktiivse teenuse osutamise põhjalikule kirjanduse ülevaatele ja tehnoloogia aktsepteerimise teooriale, viidi läbi kvantitatiivne ja kvalitatiivne analüüs. Tulemused näitavad, et Kasahstanis on oluline parandada avalike teenuste osutamise kvaliteeti. Selle põhjal soovitatakse rakendada teenusdisaini põhimõtteid ja suurendada kasutajakesksust avalike teenuste osutamisel, et parandada teenuste osutamise kvaliteeti Kasahstani avalikus sektoris.

Lõputöö on kirjutatud Inglise keeles ning sisaldab teksti 69 leheküljel, 5 peatükki, 18 joonist, 3 tabelit.

List of abbreviations and terms

AOM	Agent-Oriented Modeling
ACSA	Agency for Civil Service Affairs
CDO	Chief Digital Officer
GDS	Government Digital Service
GCSC	Government for Citizens State Corporation
ICT	Information and communication technology
IS	Information Systems
MDDIAI	Ministry of Digital Development, Innovations, and Aerospace Industry
MLSPP	Ministry of Labor and Social Protection of Population
MoJ	Ministry of Justice
NIT	National Information Technologies
PSC	Public Service Center
SSIF	State Social Insurance Fund
TAM	Technology Acceptance Model
UXP	Unified Exchange Platform

Table of contents

List of figures

List of tables

1 Introduction

1.1 Overview

Proactive and seamless public service provision is considered as the next level in E-Governance progress among governments. Ease of use, promptness, and convenience are fundamental when it comes to the evolution of public service provision. Proactive public services meet these qualities, and serve as a helpful tool for citizen-centered timely service provision to citizens. The path to proactivity is leading towards increased level of citizens' satisfaction with public service provision.

Kazakhstan's government officials are contributing a vast amount of recourses to the development of E-governance. Currently, the majority of public services are delivered digitally in Kazakhstan. Government considers proactivity as the next logical step in public service provision. Considering that, within the framework of the current thesis it is necessary to explore if there are standards for designing and building proactive services and if infrastructure allows that transition.

1.2 Thesis motivation

According to studies and reports (Amanbek et al., 2020; OECD Eurasia, 2016), results of which are provided in the following chapters, the provision of public services in Kazakhstan should utilize citizen-centricity, and life event approach for improving the provision of public services.

The main goal of the thesis is to analyze the readiness of the public sector in Kazakhstan to implement proactive public service provision. The research investigates the perspectives on proactive public services provision in Kazakhstan, thus focusing on current achievements and possible obstacles. Considering this, the research results of the current master thesis will be useful to the relevant ministries and policy representatives as they will be provided with recommendations for improving the work on developing proactive services.

The research is conducted to investigate the readiness of public sector to provide proactive services in Kazakhstan, and the results of the thesis provide recommendations relevant for proactive public service development in Kazakhstan.

1.3 Thesis outline

The current thesis consists of five chapters. The first chapter provides the introduction, research questions, and methodology, thus setting the framework of the thesis. Following that, the theoretical framework for the research topic is provided. The third chapter gives an overview of E-Governance development in Kazakhstan and the overview of Kazakhstan's E-Governance maturity level. It also gives an overview of international practice of proactive public service provision. The fourth chapter covers the results and analysis of empirical research. The thesis is concluded with policy recommendations for further proactive public service design and prospects of future work.

1.4 Research questions

In order to reach the goals of the current thesis, the following main research question was formulated: How to implement proactive public services in Kazakhstan?

The following sub-questions were formulated for supporting the main question:

- What are the requirements that proactive services should correspond to?

- What is the current situation with existing public services in Kazakhstan?

- What are the perspectives for implementing proactive public services in Kazakhstan?

1.5 Research design and methodology

In order to comprehensively address the research questions, the thesis applied the mixed-methods research strategy. This research strategy includes both qualitative and quantitative methods.

Primary and secondary sources were used: expert interviews along with analysis of publicly available data on the requirements for proactive public services. As the thesis aims to research real-life situations of public service provision, the decision on conducting qualitative interviews with experts was relevant for obtaining information from primary sources. The qualitative methodology with interviews is used to get expert feedback, experiences concerning the researched area, and a direct overview of the current situation. Along with that, the desk study of documentation, available publications, and academic writings set an excellent theoretical foundation for designing proactive public services.

Perspectives of proactive public service implementation are analyzed using semi-structured expert interviews to highlight achievements and further steps to be taken from the service provider perspective.

According to Adams, semi-structured interviews are well-suited when there is a necessity to "conduct a formative program evaluation and want one-on-one interviews with key program managers, staff, and front-line service providers" (Adams, 2015).

Considering the intensity of resources required for the process, as stated by Adams semi-structured interviews "should be worth the effort in terms of the insights and information gained" (Adams, 2015). Thus, it was decided to conduct seven interviews.

The seven semi-structured interviews were conducted during the period from 8 April to 4 May 2021. Participants were approached in advance before the planned interview period. The background of the research, the purpose of the interview, and the researcher's affiliation with Tallinn University of Technology were explained to experts.

All interviews were conducted remotely via Zoom, except for one interview from Social Insurance Fond, as they provided answers in written form. Interviews were conducted in Russian to provide the convenient process of the interview. With the consent of each interviewee, an audio recording was used in order to transcribe the conversation later.

Adams (2015) stated the optimal maximum length for semi-structured interview is advised to be one hour. Considering that, the author decided to limit the interview duration to 50 minutes.

Interviews were semi-structured with predetermined questions. The interview guide consisted of two parts. The questions consisted of a set of core questions for every interview and sub set of questions varying according to the expert's expertise.

Interviewees were informed about the objectives of the interview and the overall objective of the current thesis. Interviewees were informed that interview results would be used in master's thesis, and the consent for using experts' names was asked from the interviewees. Interviews were conducted in Russian, and then answers were translated into English. Interviews were recorded with permission from interviewees. Concerning the relevantly small number of interviews thematic analysis was carried out manually. The notes and essential patterns of interviews were created for further analysis and conclusions. The results of the interviews were divided into thematic parts.

Following that, citizens' opinion of the current level of public service provision by state authorities is assessed. The expectations towards receiving seamless and proactive public services were estimated. The survey was conducted between 10 and 27 April 2021.

The questionnaire created to analyzing the social aspect as the readiness of citizens to receive public service proactively is provided in Appendix 3. Acceptability of seamless public service provision by citizens is assessed, along with the level of satisfaction with the current public service provided by the state.

The survey was conducted on a random sample of Kazakhstan citizens. The questionnaires were distributed in a snowball sampling method online through social media platforms and by e-mail. Participants were recruited by posting the survey on social media platforms. Questions were composed using Google Forms. Questions included multiple-choice questions in order to get a comprehensive understanding of citizens' points of view on specific questions. The survey was conducted in Russian (as it is considered an international language used in Kazakhstan), then the results were translated to English. The questionnaire was anonymous.

2 Theoretical framework

This chapter presents the theoretical basis of concepts relevant to the current master's thesis by outlining a comprehensive picture of citizen-centric public services design. It helps to answer the following sub-question: What are the requirements that proactive public services should correspond to?

The answers to the sub-question mentioned above will determine the necessary steps that need to be considered for successfully creating proactive public services, along with the thorough analysis of existing requirements and prerequisites for designing proactive public services.

Answering this question will allow gaining a deeper understanding of the essence of services and government stage models. It sets the framework of the thesis by examining existing studies related to proactive service provision. The chapter begins with the overview of theoretical concepts, forming the basis for the notion of proactive public services. It consists of five subparts that define proactive public services concerning certain notions that apply to them.

As proactive public services are a relevantly new concept and not comprehensively researched, there is a need to include broader concepts related to public service provision. First, the theoretical concepts of socio-technical systems, stages of e-government, and service design methodology along with life events in public service design are covered in order to get the full picture on the proactive public service provision. Second, prerequisites for proactive service provision are covered, along with the concepts of public service provision, e-service.

2.1 Overview of the relevant theories

The use of socio-technical systems theory in designing systems is important as it helps to develop better and useful systems that bring benefits to all stakeholders. The concept applies to the e-governance sphere, as the primary feature of socio-technical thinking is

that both social and technical factors should be considered when implementing system design.

Baxter and Sommerville (2011) argue that achieving an appropriate balance between social and technical requirements is necessary for the construction of a system that will be used by the end-users, along with providing the expected benefits to the stakeholders (Baxter and Sommerville, 2011). Digital socio-technical design combines perspectives, tools, and methodologies from social and technical design frameworks. Accordingly, E-governance is associated with two different perspectives, applying ICT for public service provision along with governing citizens through ICT means (Winby and Mohrman, 2018).

As the citizens' decision to accept proactive public service offered to them depends on the overall level of technology acceptance, theories that address the ICT acceptance apply to current research. Fred Davis (1989) defined Technology Acceptance Model through two particular indicators, namely perceived usefulness and ease of use. The results of the study revealed the connection between usefulness and user acceptance (Davis, 1989).

DeLone and McLean researched the IS success introducing two versions of IS Success Model. Authors characterize IS success as a multidimensional concept, which helps to identify the efficiency of IS progress. The authors proposed the updated version of IS Success Model, which consisted of the following indicators: system quality, information quality, service quality, intention to use, user satisfaction, and net benefits (DeLone, 2003).

2.2 E-Governance maturity models

The author acknowledges that E-Governance maturity assessment helps authorities from a strategic perspective to identify weak components in E-Governance development and take appropriate actions or decide on future development direction.

E-Government maturity models are used as a tool for assessing and benchmarking E-Governance development in particular a state. The reason to use the stage-based approach in determining the level of E-Governance development in a state was adopted from different academic disciplines using stage classifications to evaluate progress.

When it comes to research related to E-Governance, it should be mentioned that there are various maturity models developed, with the common feature such as four stages in the E-Governance maturity model, with the highest number of levels introduced as six. Maturity models assess the level of progress in government technology. Maturity models are broadly characterized as including four stages – publishing, interactivity, completing transactions and delivery of services (Albalushi and Ali, 2015).

The most often cited article on the E-Governance maturity model is an article by Layne and Lee (2001) published in Government Information Quarterly. They characterized E-Governance maturity by four stages: catalogue, transaction, vertical integration and horizontal integration (Layne and Lee, 2001). Further, scholars provided their models, analyzing additional features and debating on the linear description of maturity stages. The discussion included aspects that E-Governance development appears not in the linear format but can develop simultaneously. Andersen and Henriksen (2006) extended the Layne and Lee model, and they proposed to take into account a user perspective, focusing more on activities for end-users.

The review of 29 E-Governance maturity models by Abdelghany et al. provides an extensive overview of previously developed models (Abdelghany et al., 2016).

Though there is a wide range and number of papers, this section may not cover all possible articles and models in the field. Therefore, it is more appropriate to take into consideration the 4th stage of the E-Governance maturity model. Developing proactive services could be considered as the 4th stage of E-Governance maturity is achieved. Investigating maturity models allows us to understand the requirements for proactive service implementation.

A more recent publication that is worth highlighting is the one provided by Gartner, where the efficiency of data usage for redesigning services and providing new services was added for E-Governance maturity assessment (Gartner, 2017). The stages include the Initial (E-Government), Developing (Open), Defined (Data-Centric), Managed (Fully Digital), Optimizing (Smart) (Gartner, 2017).

2.3 Public services

In E-Governance studies generally the term public refers to its provision by a public sector agency. Public organizations are defined as the formal public entities that manage public administration. Hence, public services are defined as the services provided by public organizations to citizens. The user of public services is viewed as a citizen, rather than as a consumer (Lindgren and Jansson, 2013).

Based on the fact that a citizen has certain constitutional rights, there is a political and public character of service delivery by public organizations. At the same time, the quality of public services depends on how citizens perceive the political system (Lindgren and Jansson, 2013).

2.3.1 Public e-services

The term e-service stands for electronic service. Hence, it is a service delivered electronically. An electronic service in the government context consists of the provision of transactions and activities by the online channel (Sa et al., 2016).

There is an evident increase in electronic service provision around the Globe. An increasing number of traditional services are transferred to the requirement through the Internet (Sa et al., 2016). At the most general level, service indicates obtaining a specific effect due to interaction among two or more systems (Quartel et al., 2006).

It is worth to mention the characteristics such as intangibility, heterogeneity, inseparability, and perishability (IHIP) that describe services, which have been subjected to criticism. The marketers of services initially provided the characteristics at the beginning of the 1990s (Parry, et al., 2011). Electronic service appears when this interaction is mediated by information and telecommunication technologies (Bekkers and Zouridis, 1999).

When it comes to the quality of e-services, in recent years, in the public sector, it has raised serious concerns. Hence, organizations have begun to assess and analyze the quality of their services (Sa et al., 2016). The quality of service is examined based on the value provided to the consumer of the service; therefore the user experience is paramount in the relationship between the user and the provider (Lindgren and Jansson, 2013).

According to Albalushi and Ali (2015), the following models and frameworks to evaluate e-government and e-service quality could be mentioned: WebQual (2000), Sitequal (2001), eTailQ (2003), E-S-Qual (2005), eGovSat (2006), WebQual (2007), eGSQ (2007), SSTQual (2011) and e-GovQual (2012). For analyzing and assessment purposes, quality dimensions were introduced by researchers. A summary of key quality dimensions can be grouped into five categories: content/website design, performance, security, personalization, and citizen involvement. According to the current trends, the performance and personalization parameters receive the most emphasis (Albalushi and Ali, 2015).

2.3.2 Proactive and personalized public services

The concept of proactive public services is not a widely researched area. Although there are few studies available concerning proactive service delivery in the public sector, the experience of Taiwan's proactive government approach is relevant. Furthermore, Callen and Hasanain (2011) covered the Punjab Government's initiative, which was defined as proactive governance.

Linders defines that proactive services aim to transfer from the traditional "pull" approach towards the "push" approach. In that case, the government provides just-in-time information and relevant services according to citizens' needs (Linders et al., 2016).

Moreover, Sirendi and Taveter (2016) analyze public service design thinking and proactivity through the lenses of the AOM methodology.

The social aspect of proactive service provision was questioned by Regina Erlenheim in her Doctoral thesis. It was stated that "... the activities could be considered as contradictory to the constitution, even though the rationale behind the activities was to be socially inclusive." (Erlenheim, 2019).

Proactive service provision requires certain prerequisites and requirements, such as technological, political, legal, social readiness, resources and change management aspects, etc.

2.4 Service Design in the public sector

Service Design and Design Thinking are used as theoretical backgrounds for this thesis because they could be used for complex service systems and implemented for innovation growth in the public sector.

The prerequisites for service design include the process of examining the target customers and their requirements. Thus, public participation mechanisms are needed to obtain information regarding the level of service demanded by citizens (Peña et al., 2001). In Service Engineering, a service is defined as an activity provided by a service provider to change the state of a service receiver (Shimomura et al., 2008).

The public sector is characterized by covering different types of customers, so it is necessary to analyze various types of requirements as they vary from customer to customer. One possibility is to use the approach of group decision-making, which includes the portfolio analysis to compare customer categories and requirements. Along with that, the concept of "persona" is worth to mention in the design of software interfaces, which is a tool for describing a customer, from which designers identify the customer requirements (Shimomura et al., 2014).

Stickdorn and Schneider (2010) have formulated five principles of good service design, which reveal the main characteristics of service design. They are characterized as user-centered, co-creative, sequencing, evidencing, holistic.

The theory of co-designing services with the customer and service design methodologies could be applied to the thesis topic. Co-designing services mean partnership and shared leadership, where public service staff continues to play a key part in leading service design alongside customers, whose input is first-hand knowledge.

In this regard, several academic writings could be mentioned. For instance, the paper written by Jakob Trischler et al. (2019) addresses how co-design with users can be used in public service contexts. Along with that, Marc Steen et al. (2011) identify three types of benefits of co-design in service design projects.

Sirendi and Taveter in their research emphasize the necessity to use AOM approach for designing systems that involve different agents. AOM methodology is suitable for

designing proactive services as it allows concentrating on users' needs, addressing particular human aspects (Sirendi and Taveter, 2016).

Yu and Sangiorgi defined Service Design methods and tools used by designers as the process of interpreting invisible events into substantial form. For this reason, designers use customer journeys, storyboards. Personas, service blueprints, and experience prototypes are also used. The authors highlighted that Service Design applies the Design Council double diamond model, following four steps: discover, define, develop and deliver (Yu and Sangiorgi 2014).

2.5 Life Events approach in public service design

Life Events' concept helps service providers to provide more user-centric services that correspond to users' needs. As regards to the relevance of Life Events to proactive services, Regina Erlenheim's in her research, stated that "... implementing the life and business event logic, sets the foundation for the provision of proactive public services, as one of the fundamental prerequisites for life and business event's is the unification and integration of information systems that, in turn, would enable the implementation of proactive public services." (Erlenheim, 2019).

Trochidis et al. argue that Life Events are the "guiding metaphor for presenting and providing integrated public services." Thus, a Life Event consists of public services relevant to a given event in a citizen's life (Trochidis et al., 2007). Wimmer and Tambours (2002) argue that the Life Events or episodes approach came up from the necessity for public e-service provision based on the citizen's needs. Researchers state that Life Events characterize the situations where citizens may require public services, such as giving birth, application to the school, getting married or divorced, buying or selling the house, etc. (Wimmer and Tambours, 2002).

The Life Event approach was initially introduced for government web portals called Life Event portals to guide the user through a particular life-event (Vintar et al., 2002).

Concentrating on the technological feasibility of Life Event government portals Wimmer, Todorovski et al., Trochidis et al. proposed several solutions. First, Wimmer proposes the solutions for IT infrastructure for public services based on Life Events. One of her recommendations was to establish Service Repository (SR) and a Service

Creation Environment (SCE). The first solution proposes to catalogue, describe, and link all services to the particular Life Event. The second solution is aimed to build the front-end of the Service Repository through a set of tools (Wimmer, 2002).

Then, Todorovski et al. presented the ways of modelling Life Events within the Service Repository framework in accordance with the Governmental Markup Language (GovML). Todorovski et al. characterized Life Events using four levels of abstraction presented in the figure below (Todorovski et al., 2006).
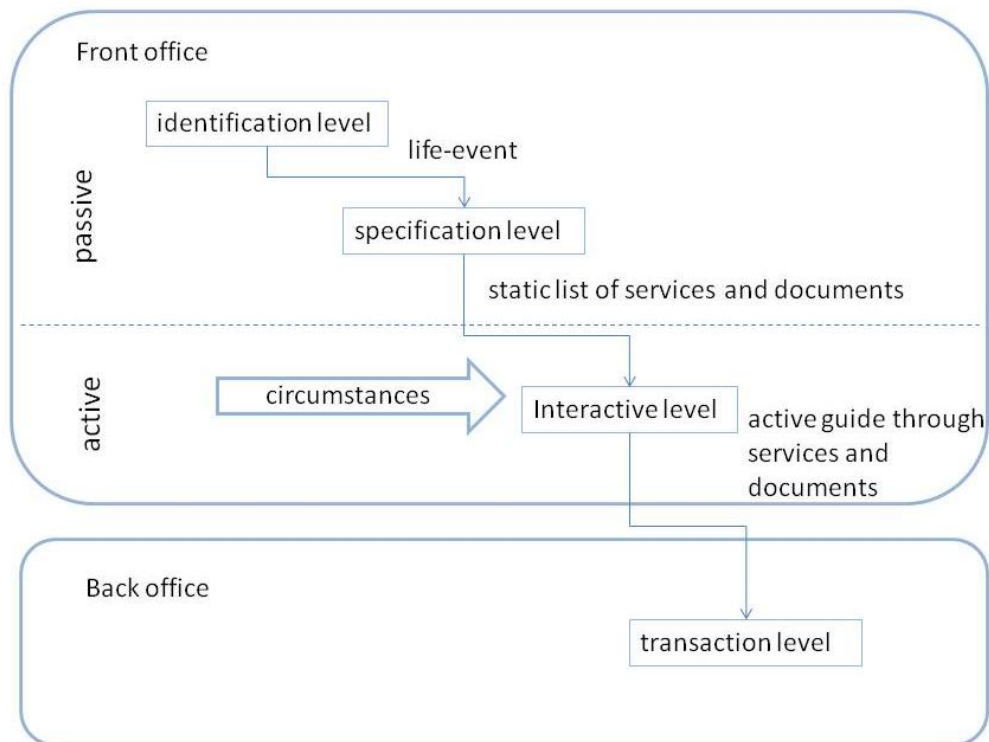
Figure 1. Life Event models at four levels of abstraction. Adapted from Todorovski (2006).

The first (identification) level consists of a Life Event description allowing users to distinguish their particular situation. The second (specification) Life Event models comprise data on corresponding public services to their life event. Here as the standard template for building Life Event models is GovML data vocabulary is used. The third (interactive) level corresponds to the development of actual active portals. Further, transaction-level is related to the back office perspective, as information on how to provide individual public services is provided for relevant employees (Todorovski et al., 2006).

Carrying on with this line of research, Todorovski et al. developed a General Life Event Reference Model that "can be used as a template to model virtually any life event", designing a workflow through a Life Event (Todorovski et al., 2007).

3 State of the art

This chapter helps to answer the following sub-questions:

- What are the requirements that proactive public services should correspond to?

- What is the current situation with existing public services in Kazakhstan?

In order to form a better understanding of the requirements relevant to developing proactive public services, the research of existing international experience is considered necessary to implement in the current thesis.

Following that, the current state of E-Governance development in Kazakhstan is analyzed. The readiness of the public sector in Kazakhstan to provide proactive services is examined. E-Governance Maturity Model assessment was used for that purpose. Thus, technological infrastructure is overviewed. The data-sharing aspects between state agencies are overviewed. Further, other aspects of E-Governance maturity that are relevant to the current thesis topic are covered. The required information is gathered by analyzing publicly available documents, as a secondary data source complemented by interview results, presented in the following chapter.

3.1 International practice of Proactive public service provision

Various governments have started providing public services proactively. Along with that, several countries are implementing service design when developing public services.

A study provided by PricewaterhouseCoopers on behalf of the Government called "The Integrated Portfolio Management of Public Services" argues that along with taking services to electronic channels and developing proactive services, a diversity of channels need to be provided. Along with that, the study states that "the aim of the state should be to provide fewer services that a client has to apply for, and more proactive, invisible services" (PricewaterhouseCoopers, 2014).

The UK is taking an inclusive service design approach for public service. User centric service design in UK is implemented through Government Digital Service (GDS). GDS works in collaboration with UK government departments to build platforms, standards, and digital services. GDS uses Agile methodology and other approaches to deliver services, along with employing service standards and service manuals in order to improve the approach to service provision by government bodies. Along with that, the Government Transformation Strategy is following a Service Design approach. GDS, in collaboration with departments, is currently re-writing the government's, Service Standard. A more user-centric approach in digital government is visible when public digital services are required to demonstrate that they have considered and addressed user needs in order to be implemented. In 2018, GDS created the public sector's first ever Design System for the UK government design community (European Commission, 2019).

A vision paper named "Next-Generation Digital Government Architecture" describes the features of "Next generation seamless citizen experience". The paper states that proactive services are "the next evolutionary step following Estonian once-only principle". The once-only principle means that data from the citizens should be asked once when it is needed to handle a single life event of the citizen. Estonian government approved an action plan for proactive services on 07.12.2018. The main idea is that "public services are going to be made user-friendly, proactive, seamless and automatic life event services" (GCIO Office, 2020). The action plan for life and business event service redesign approved by the Estonian Government Cabinet targeted seven event-based services. The first part of the redesigned and prototyped of having a child event service, the proactive offering of family benefits was developed and lived in 2019. The next steps were automation of the rest of the services related to having a child, redesigning and prototyping four other life event services, developing a uniform development and management model for event services. Furthermore, there was a plan to measure all the life event services at least in four categories, such as user satisfaction, time spent, cost of the service, and the number of use cases (OPSI, 2019).

As stated by Kroot Kroonmae in her research, Estonia has a technological infrastructure that supports the development of proactive services (Kroonmae, 2017). One of the valuable aspects of technological infrastructure is the X-Road, which allows to securely share the data between main public sector registries and databases. The technological

capability for the X-Road data exchange layer is provided by the Unified Exchange Platform (UXP). It has several characteristics, among which are security, reliability, and ease of use. UXP provides non-repudiation to exchanged information, guaranteeing authenticity and integrity. Safety measures against denial of service (DoS) attacks are utilized. The ease of use is provided through such features as one API and a set of rules for developers, and communication is reached through a UXP Adapter. All requests and responses are digitally signed and time-stamped. The encrypted and mutually authenticated channel is used. The UXP Core Components consist of UXP Security Server, UXP Registry, UXP Monitoring System. The Security Server digitally signs, timestamps all messages, which are exchanged through a cryptographically secure channel (E-Governance Academy, 2016).

Next to mention, there is an example when Life Event was utilized by services designers from Singapore. A particular example is relevant as service designers use Life Events for user research for understanding the bigger context of citizen's lives. Service designers join up user journeys and interactions, conduct interviews with users, and engage stakeholders in the process (Holliday, 2019; Ganesan et al., 2019; Lau, 2019).

The mobile phone application named Moments of Life was started with a small pilot. The methods used by Singaporean experts included journey mapping. The ethnographic research was initiated in order to distinguish key citizen archetypes to interview. Along with that, interagency collaboration was required (Ganesan et al., 2019; Lau, 2019).

3.2 Current E-Governance development results in Kazakhstan

Digital transformation is considered a key feature in Kazakhstan's intention to enter the list of top 30 developed countries by 2025 (Zerde, 2021a). Kazakhstan was placed 29th in the ranking of the United Nations' E-government Development Index in 2020. Kazakhstan's E-Government Development Index (EGDI) grew by 10.2%.

The online services index increased by 6.38%. Over the last two years, laws on public services and new technologies have been adopted. The number of automated public services in Kazakhstan grew up to 83%. Up to 26 services are possible to get via telegram bot. eGov Mobile service has been launched. Further, 0.92 point Kazakhstan

got on the level of e-services. 26th place on e-Participation, rising for 16 positions (Zerde, 2021a).

Overall today, the National Register of the Republic of Kazakhstan has 740 services. Kazakhstani citizens can obtain public services both online via egov.kz portal, mgov mobile app, and Telegram Bot and offline by applying to one of the 329 front offices of Government for Citizens Public Corporation. In six months of 2019, citizens obtained 23.5 million services via the e-Gov portal and 15 million services via Public Corporation front offices. Automation and optimization of public services are the key areas of the Digital Kazakhstan State Program. Within the area, it is planned to integrate all government agencies` processes and systems and to exclude paper documents and abstracts to improve the quality of public service delivery (MDDIAI, 2021a).

Kazakhstan is implementing the development of E-Governance through the Digital Kazakhstan State Program, Decree No. 827 which was approved by the Republic of Kazakhstan Government on December 2, 2017. The program results are aimed at improving the living standards of all citizens of the country (Zerde, 2021a).

The goal of the Program is to accelerate the development of the state's economy and improve the quality of life of the population through the use of digital technologies in the medium term. The Digital Kazakhstan state program includes five directions. The program, with the period of implementation from 2018 to 2022, along with the measures under the program provide an additional impetus for the technological modernization of the country's economy and help create conditions for large-scale and long-term growth in labor productivity (Zhexembekova, 2018).

Further, several challenges indicated by studies on Kazakhstan E-Governance development should be pointed out. First, it is weak inter-ministerial co-ordination. Second, it is a lack of coherent framework for prioritizing policy reforms. Third, there are difficulties in seeking user feedback as the policy monitoring procedures are not used sufficiently. Then there is inflexibility in policy making. The policy-making process in Kazakhstan does not support testing innovative ideas (OECD Eurasia, 2016).

The research on the adoption of e-Government in Kazakhstan revealed several challenges. The research focused on analyzing Kazakhstan's e-Government portal usage, as the portal is considered as the main gateway to all government bodies. Thus,

the paper indicated the limited percentage of its usage by citizens as the barrier. Further, the data provided in the portal does not correspond to the needs of users. As the information is difficult to find, the users' intention to use it diminishes (Amanbek et al., 2020).

On top of that, the System for assessing activities of state bodies covered the aspects of the quality of services and the openness of state bodies revealed several weak points. According to the results of the quality assessment, the parameter "Openness of the state body" the share of untimely considered requests on top managers' blog platform increased eight times. There is a certain decrease in efficiency in the work of state bodies with complaints. The number of appeals considered in violation of the deadlines increased from 2.3 thousand to 3.6 thousand. Systemic problems providing services through the branches of the State Corporation "Government for Citizens" were noted (CSRA, 2020).

The MDDIAI acknowledges the need to revise the business processes of public bodies. According to the minister, high-quality digitalization can only be achieved if the business processes functions are revised: *"We understand that we will achieve high-quality digitalization when the function of business processes is thoroughly revised. We will prioritize the business processes considered for reengineering based on the citizens needs."*

The minister revealed that the ministry aims to transfer public service provision to electronic format: *"As for public services, we adhere to a strategic direction so that there will be no front offices where physical services provided."* (Kazinform, 2020a).

3.3 Overview of the main Kazakhstan E-Government focus areas

In terms of the current thesis, Kazakhstan's current E-Governance maturity is overviewed to define Kazakhstan's readiness to provide public services proactively. Proactive services require a mature E-Governance system, with necessary prerequisites implemented. Thus, the provision of proactive services could be possible on the highest level of E-Governance maturity.

As stated on the Kazakhstan E-Government Portal, the development of the electronic government in the Republic of Kazakhstan includes four stages, namely informational,

interactive, transactional, transformational. According to the information on Kazakhstan E-Government Portal, Kazakhstan E-Government development is currently on the fourth (transformational) stage (egov, 2021).

Further, the author considered the main E-Government focus areas as necessary to cover in the current thesis. E-governance focus areas that the e-Governance Academy experts use for a public sector digital maturity assessment were taken as a tool for the overview of Kazakhstan's digital maturity (EGA, 2020). As the research focuses on proactive services, the E-Government focus areas particularly relevant to the research were considered necessary to cover.

3.3.1 E-Government coordination

All government agencies that deliver services are involved in the automation and optimization of public services in Kazakhstan. The process coordinator is the Ministry of Digital Development, Innovations, and Aerospace Industry (MDDIAI, 2021a).

M. Kassen in his research states that key stakeholders related to E-Governance include central government agencies and national ministries, state-owned ICT companies and agencies (for example, National Information Technologies – the state-owned company operating the e-government platform), regional and local governments (Kassen, 2016).

The development of E-Government projects is carried out through state-owned telecommunication companies and semiprivate agencies. ICT agencies conduct work on the development of E-Government project in cooperation with corresponding ministries. Zerde National Info communication Holding administers ICT-driven projects (Kassen, 2016).

Established in 2008, Holding develops e-Government and creates IT architecture of government agencies. The company performs consistent activities to implement the "Digital Kazakhstan" national program, develops IT technologies market, and implements other projects (MDDIAI, 2021a).

The Department of Digital Transformation of the MDDIAI, which prepares the projects in the field of informatization, monitors the implementation of the State Program "Digital Kazakhstan" and works on reengineering the business processes of state bodies. Employees of the Department, within their competence, participate in the activities of

the working groups of the Parliament of the Republic of Kazakhstan, other state bodies on the preparation of draft legislative acts (MDDIAI, 2021a).

Next to mention is the Public Services Committee of MDDIAI. The Committee`s major task is the development of public policy in the field of public service delivery, its optimization, automation and, delivery based on the one-stop-shop principle. The Committee performs coordination of government agencies` activities in the field of public service delivery as well as the operation of information systems (PSC MDDIAI, 2021).

3.3.2 Legal framework

Carrying on with this line of research it is essential to cover the legal acts and regulations implemented in Kazakhstan for E-Governance development. The list of legal acts presented in the table below demonstrates the certain level of government readiness for transition to proactive service provision. Accordingly, the list of legal acts consists of the main legislation relevant to cover within the scope of current research.

Table 1. The list of main regulations related to E-Governance and public service provision in Kazakhstan.

	Regulations
1.	Law On informatization
2.	Law On access to information
3.	Law On Electronic Document and Electronic Digital Signature
4.	Law On Public Services
5.	Law On Personal Data and their Protection
6.	The Rules for the integration of Electronic government informatization objects
7.	The Register of public services
8.	The Rules for public service optimization and automation
9.	The Rules for proactive service provision

3.3.3 Digital databases, interoperability, secure data exchange

Interoperability between government agencies' information systems is carried out according to the Rules for the integration of Electronic government informatization objects. The facilitation of the integration procedures is planned to reach through the implementation of the Smart Bridge project. The purpose of creating a Smart Bridge project is the simplification of organizational procedures for integration, the interaction of government bodies with business, and development of a competitive environment (within the framework of the "Showcase of Services" platform of the "Smart Bridge" project). The Service Showcase platform provides the possibilities to create a unified catalogue of services of information systems of state bodies, automate the processes of gaining access to services through the "electronic government" gateway (egov, 2021).

Another project designed for the collection, storage, and complex analysis of data accumulated in information systems of state bodies is the Smart Data Ukimet project. The project includes the process of connecting 50 databases of information systems of state bodies in order to provide analytical information on Government activities (NIT, 2021).

3.3.4 Information security

The author considered information security as necessary to cover, based on several reasons. The first is the influence that personal data protection has on the citizens' perception of public service provision, and readiness to accept the services provided by the government.

In this regard, MDDIAI has started developing amendments to the legislation aimed at improving the scope of personal data and its protection. MDDIAI has published for public discussion the draft amendments to the legislation aimed at strengthening the protection of personal data and expanding the rights of citizens regarding personal data. Draft amendments touch upon Law On public services among others. Personal data is planned to be obtained with the consent of the data subject. In this regard, the Service for ensuring the security of personal data is planned to be implemented. This will allow citizens to control the use of their personal data by allowing or denying access to them (MDDIAI, 2021b).

3.4 Public e-service provision in Kazakhstan

Traditionally, public services in Kazakhstan required the involvement of three or more government bodies. There were such challenges as complicated business processes, lack of integration between information systems, lack of co-operation between ministries and departments (South-South Galaxy, 2021).

Today, an increasing number of government agencies provide e-services through e-government portals. The transition to the electronic provision of public services is carried out by the corresponding ministry that provides public service. Thus, public e-services are owned and managed by different state agencies. The Ministry of Digital Development, Innovations, and Aerospace Industry of the Republic of Kazakhstan serve as a central state body, carrying out management and cross-sector coordination in the scope of public service provision.

The provision of public services is regulated by the Law on Public Services, which establishes the requirements and processes of public service provision, along with the stakeholders involved. The Law defines the automation and optimization process with the following definitions:

- Automation of public service provision process – the procedure for transforming the administrative processes to ensure the provision of public services in electronic form.

- Optimization of public service provision process – a measure aimed at simplifying public service provision process (MoJ, 2013).

Furthermore, the transformation of public service provision towards e-services is regulated by the Rules for the optimization and automation of public services (MoJ, 2015).

According to the Prime Minister's information, there is an ongoing process of integration of government agencies' information systems. It is worth to mention that 344 integrations were implemented in 2019, with the plan to complete 100 more integrations. These measures made it possible to automate 82% of public services. In general, over 54 million public services were provided in an electronic format over 2019, taking into account all online channels. Due to the measures taken, the number of

requested documents has decreased on average by 30%, and the period of public service provision has been reduced from 31 to 10 days (OIRPM, 2020).

3.5 Proactive public service provision in Kazakhstan

The provision of proactive public services in Kazakhstan is regulated by the Law on Public Services and the Rules for proactive service provision. The Law on Public Services defines proactive services with the following definition:

"Proactive service - a public service provided in electronic form, rendered at the initiative of the service provider, for provision of which the mandatory consent of the service recipient is required, provided through a subscriber cellular communication device" (MoJ, 2013).

The Rules for proactive service provision are developed in accordance with paragraph 13-1 of article 9 of the Law On public services. The Rules regulate the procedure for the provision of proactive services (MoJ, 2020).

The aims of the Proactive E-service initiative in Kazakhstan included meeting the actual needs of the citizens, enhancing citizen engagement processes, reducing the time of the proceeding. In this regard, the government itself pushes a relevant service at the right time to the citizen. Providing simple and user-centric services required five ministries with many entities to involve, namely the Ministry of Information and Communications, the Ministry of Healthcare, Ministry of Justice, Ministry of Labor and Social Protection of the Population, Ministry of Education and Science. One example of such a Proactive E-service is "Child Birth" which was launched in December 2017. Citizens can name their newborn child, apply for a birth certificate, queue up at the kindergarten, find out the amount of the lump-sum payment and register at their place of residence (South-South Galaxy, 2021).

As stated by the Prime Minister, the level of automation in the public sector has increased so that public services can be transferred to a proactive format. According to the Interdepartmental Commission's decision, 30 services were selected for being provided in a proactive format. They include the appointment of payments for pregnancy and childbirth, the establishment of disability, enrolment in school, changing address data when renaming streets or settlements, etc. The registration in the database

of mobile citizens is the required prerequisite for obtaining services proactively (OIRPM, 2020).

Table 1 below provides an overview of the Order "On approval of the register of public services" amended on 15.04.2020, where the following public services include the proactive form of provision:

Table 2. The list of Public services provided proactively.

Public service name	Form of public services provision
Registration of the birth of a child, including the introduction of amendments, additions and corrections to the civil status records	Electronic (partially automated)/paper/proactive/ provided on "one application" principle
Assignment of benefits for the birth of a child and childcare	Electronic (fully automated, partially automated)/paper/proactive/ provided on "one application" principle
Assignment of benefits to the mother or father, adoptive parent, guardian (trustee) raising a disabled child	Electronic (fully automated, partially automated)/paper/proactive/ provided on "one application" principle
Appointment of state benefits to mothers with many children who were awarded the "Altyn alka", "Kumis alka" awards or who had previously received the title "Mother Heroine", awarded the orders of "Maternal Glory" I and II degrees	Paper/proactive
Assignment of allowances for caring for a disabled person of the first group from childhood	Electronic (fully automated, partially automated)/paper/proactive/ provided on "one application" principle
Assignment of benefits to a large family	Electronic (fully automated)/proactive
Enrolment of preschool children (up to 6 years old) for referral to preschool organizations	Electronic (partially automated)/paper/proactive/ provided on "one application" principle

Public service name	Form of public services provision
Assignment of social benefits in case of incapacity for work	Paper/proactive
Appointment of state social benefits for disability	Electronic (partially automated)/paper/proactive/ provided on "one application" principle
Payment of the difference between the amount of actually paid compulsory pension contributions, compulsory professional pension contributions, taking into account the inflation rate and the amount of pension savings	Paper/proactive
Assignment of social benefits in case of job loss	Electronic (fully automated)/paper/proactive/ provided on "one application" principle
Assignment of social benefits in cases of loss of income due to pregnancy and childbirth, adoption (adoption) of a newborn child (children)	Electronic (partially automated)/paper/proactive
Assignment of social benefits in case of loss of income in connection with caring for a child upon reaching the age of one year	Electronic (fully automated)/paper/proactive/ provided on "one application" principle
Appointment of a special state allowance	Electronic (partially automated)/paper/proactive/ provided on "one application" principle
Registration of documents for the provision of disabled persons with prosthetic and orthopedic care	Paper/proactive
Registration of documents for the provision of disabled persons with technical auxiliary (compensatory) means	Paper/proactive
Registration of documents for the provision of services of an individual assistant for disabled persons of the first group who have difficulty in movement	Paper/proactive
Registration of documents for the provision of disabled people with the services of a sign language specialist for the hearing impaired - sixty hours per	Paper/proactive

Public service name	Form of public services provision
year	
Registration of documents for the provision of disabled people with special means of transportation	Paper/proactive
Registration of documents for the provision of disabled people and disabled children with sanatorium treatment	Paper/proactive

As could be seen from the table above, the MLSPP is taking steps towards the next level of public service provision, as it is stated that 18 public services from the social and labor sector are being provided proactively. As stated by the Minister of Labor and Social Protection of the Population of the Republic of Kazakhstan 91% of services in the social and Labor sphere were digitized in 2020. 40 out of 44 services are provided in electronic form, 18 of which are proactive. At the end of 2020, 12.4 million services were rendered, 7.8 million of which were e-services. The ministry is planning to digitize the processes of assigning pensions and benefits in 2021. According to the Minister, the MLSPP continues the work on the Social Services Portal and Digital Family Card project. The Minister revealed that the Digital Family Card project is aimed at providing social support measures to families in difficult life situations. There is an automatic identification process which allows providing services proactively (Open Dialog, 2021).

4 Research Outcome and Findings

The following chapter demonstrates the results of expert interviews and surveys. Results of quantitative and qualitative analysis help to examine the factors supporting the development of proactive services along with the possible obstacles.

The interviews and survey were conducted in order to obtain the answers to the following research sub-questions:

- What is the current situation with existing public services in Kazakhstan?

- What are the perspectives for implementing proactive public services in Kazakhstan?

The abovementioned sub-questions help to examine the challenges along with the factors supporting the development of proactive services. Answering the sub-questions allows analyzing the perspectives of implementing proactive public services. In order to define the achievements and further directions that are planned to implement from the service provider perspective.

These sub-questions aim to understand the factors that support the development of proactive services in Kazakhstan. Interview and survey allow to assess support factors and possible obstacles that affect proactive public service implementation in Kazakhstan.

4.1 Survey results and analysis

The results of the survey confirmed the necessity to address user-centricity and the need to improve the quality of public service provision. 210 respondents participated in the survey, answering 17 questions presented in Appendix 3.

Sample characteristics and description

Age of respondents: 16-24 (25%), 25-35 (37%), 36-45 (18%), 46-55 (13%), 56 and above (7%). The share of respondents for each age category showed a relatively uniform coverage. However, there was a predominance of respondents between the age of 16 to 35 (Figure 2).
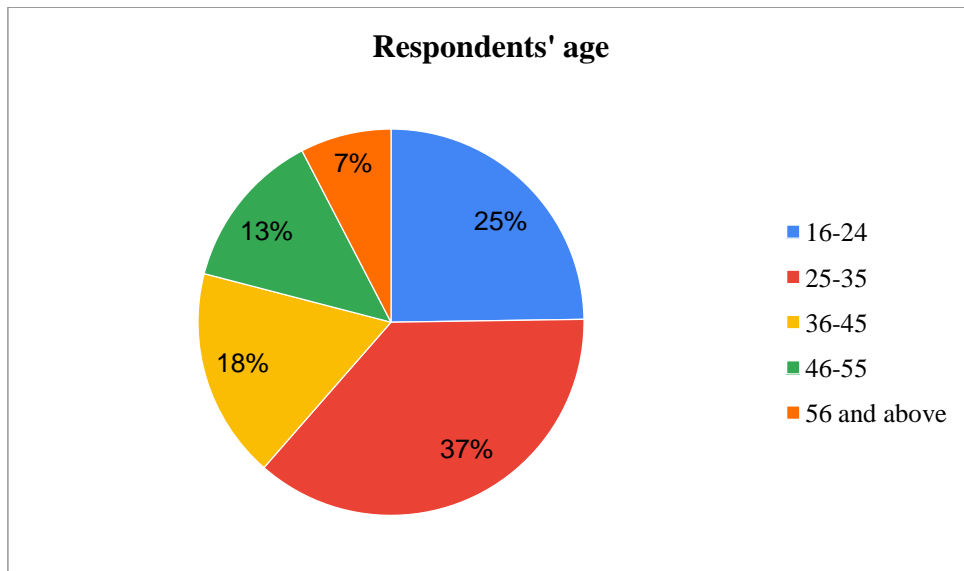
Figure 2. Respondents' age.

From 210 respondents who took part in the survey, 35% were men and 65% were women (Figure 3).
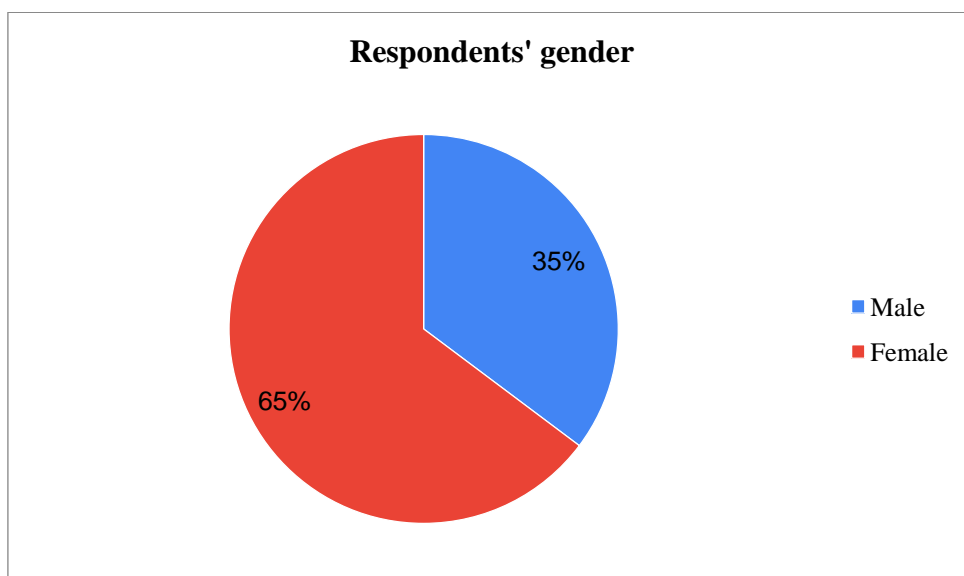
Figure 3. Respondents' gender.

The results of the survey showed that 50% of respondents live in the capital and 45% in other cities (city of republican significance - 16%, regional center - 15%, city of regional subordination - 14%). The survey only partially covered the residents of rural areas, with only 5% of respondents are the residents of rural areas (Figure 4).
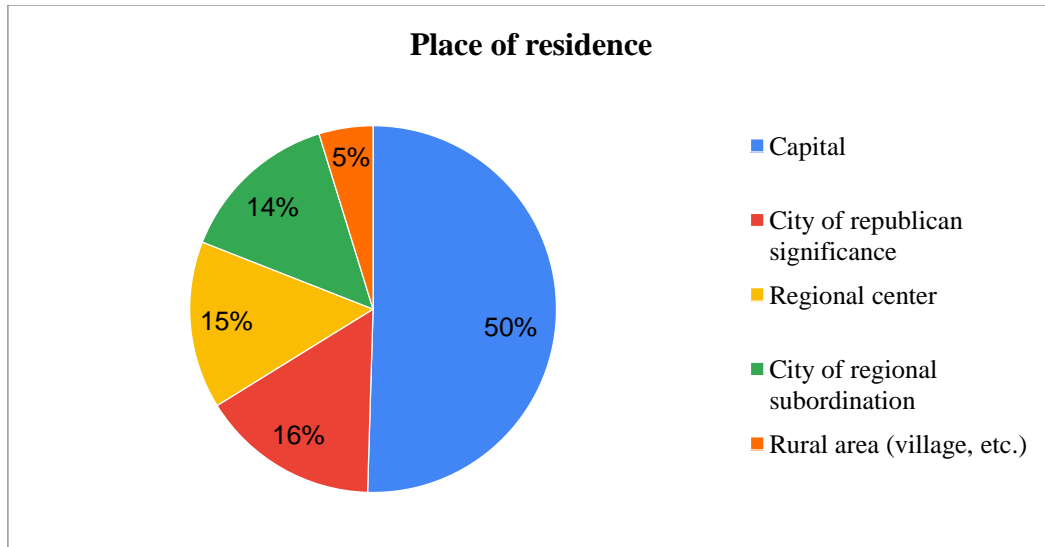
Figure 4. Place of residence.

Most of the respondents (55%) have a bachelor's degree, 25% with a master's degree, 13% of respondents with a secondary/specialized secondary education, the share of respondents with a Ph.D. degree and above was 7% (Figure 5).
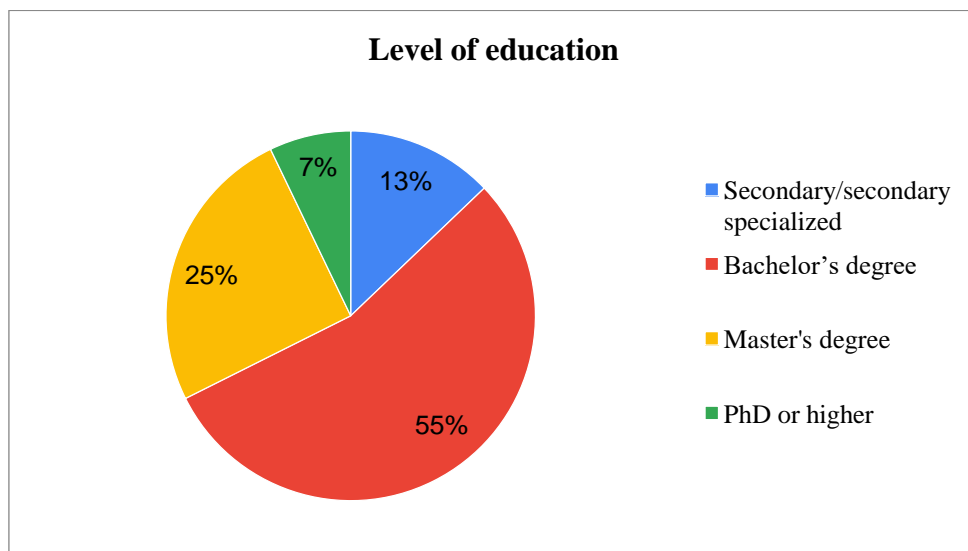
Figure 5. Level of education.

Survey results and analysis

The results of the survey revealed that respondents prefer to use the E-Government web portal (www.egov.kz) (34%), and visit the PSC (28%) for receiving public services. Another 14% of responses revealed the preference of the eGov mobile app use and 13% of answers relate to Telegram bot of the E-Government portal (EgovKzBot2.0). 8% of replies relate to Egov.kz SMS services. The smallest share, 3% of responses, relates to appeals to territorial state bodies (Figure 6).

Methods preferred to receive public services

| Method	Percentage
Egov.kz services via SMS	8%
Telegram bot of the E-Government portal (EgovKzBot2.0)	13%
eGov Mobile app	14%
E-Government web portal (www.egov.kz)	34%
Territorial state bodies visit (departments, offices, divisions)	3%
Public Service Center (PSC) visit	28%
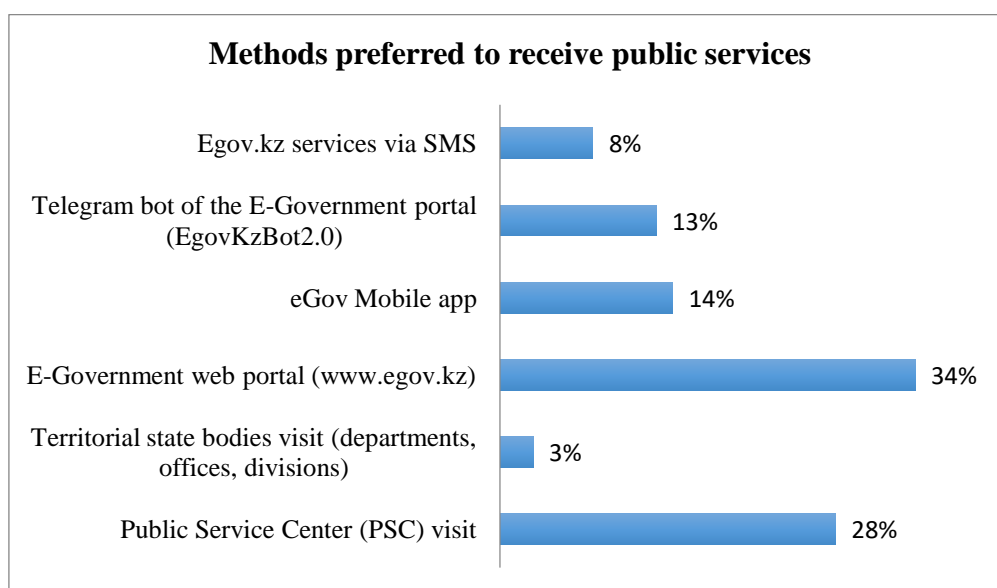
Figure 6. Methods preferred to receive public services.

The survey results show that the majority of respondents (70.6%) receive government services 1-2 times a month.21% of respondents apply for government services less than once a month. Only 5% of respondents apply for government services more often (3-5 times). Only 2% of respondents frequently apply for government services (more than 5 times) (Figure 7).
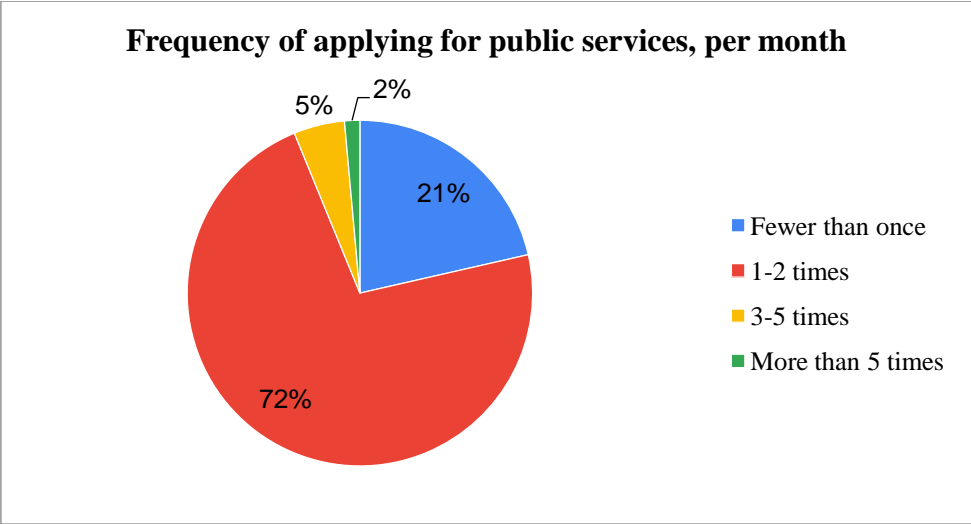
Figure 7. Frequency of applying for public services, per month.

The results of the survey showed that the majority of respondents (37%) apply for government officials 1-2 times a year, 31% of respondents - 3-5 times a year, more than 5 times - 14%, more than 10 times - 15%, and less than 1 time per year - 3% (Figure 8).
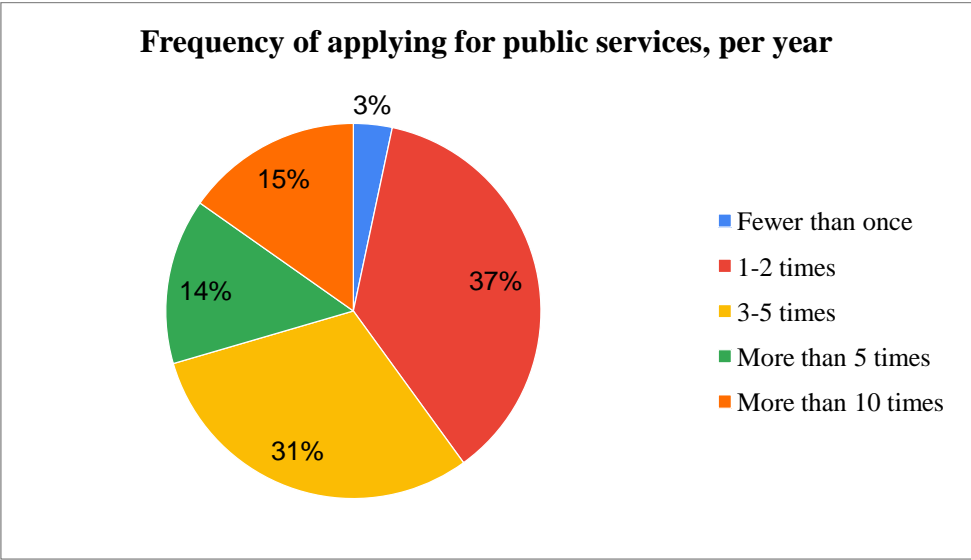
Figure 8. Frequency of applying for public services, per year.

The following spheres of the public sector are most in-demand by the respondents: Family (19%), Healthcare (18%), Real Estate (17%). The public services demanded by respondents on the average level were in the following areas: Employment and employment (11%), Social security (10%), Education (10%), Customs and taxes (6%). The least demanded services were from the following areas: Legal assistance (2%), Citizenship, migration, immigration (2%), Transport and communications (2%), Tourism and sports (1%), Military registration and security (1%) (Figure 9).

41

Public service sectors that respondents apply for

- Military registration and security — 1%
- Tourism and sports — 1%
- Transportation and communication — 2%
- Legal assistance — 2%
- Customs and taxes — 6%
- Real estate — 17%
- Citizenship, migration and immigration — 2%
- Social security provision — 10%
- Job placement and employment — 11%
- Education — 10%
- Healthcare service — 18%
- Family — 19%
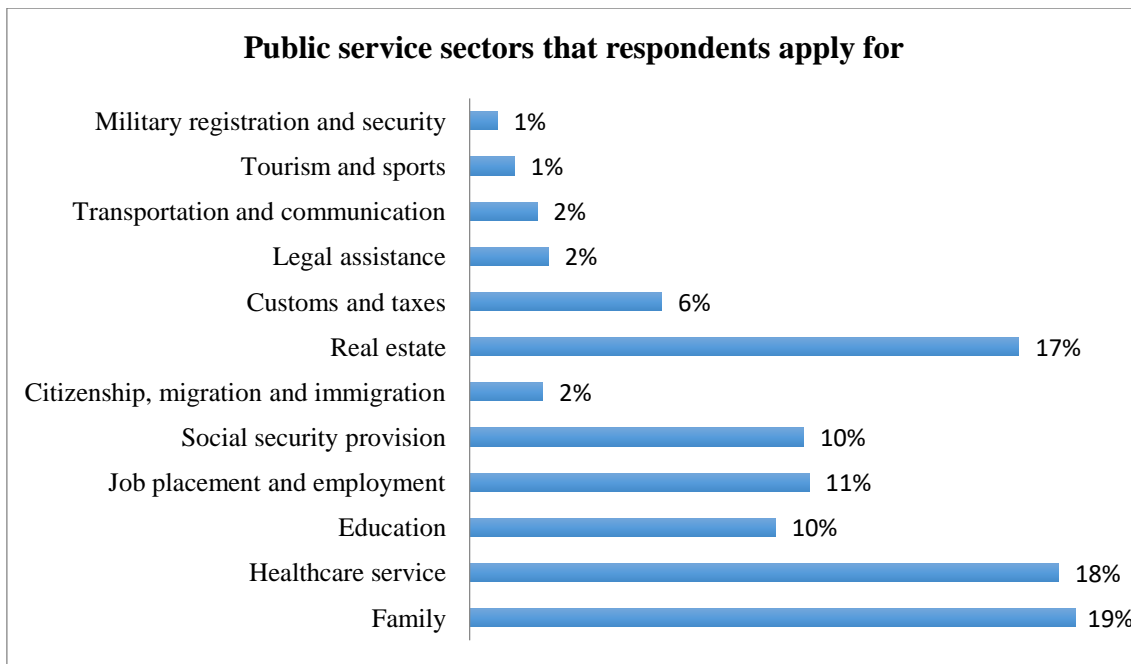
Figure 9. Public service sectors that respondents apply for.

The purpose of the survey was to identify the level of citizens' satisfaction with public services, and its impact on consent provision to receive public services in a proactive format.

The survey revealed that only 29% of respondents are completely satisfied with the quality of public services. The majority of respondents (61%) are partially satisfied with the quality of public services. 10% of respondents are not satisfied with the quality of services provided (Figure 10). The results show the need to improve the quality of public service delivery.

The level of satisfaction with the quality of public service provision

- 29% ■ Completely satisfied
- 61% ■ Partially satisfied
- 10% ■ Not satisfied
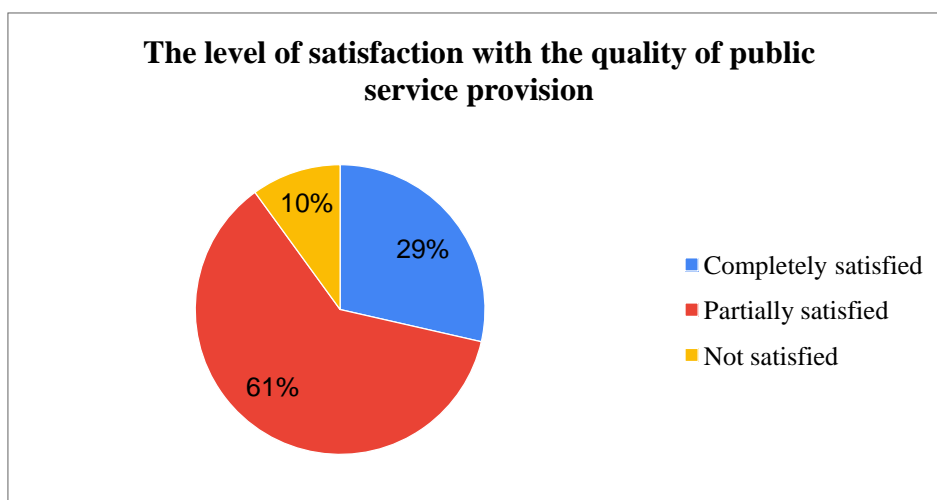
Figure 10. The level of satisfaction with the quality of public service provision.

The next question assessed the attitude of respondents towards the use of personal data for public service provision. The majority of respondents have a positive (23%) and rather positive than negative (26%) attitude towards the use of personal data for public service provision. The attitude of 30% of respondents to the use of personal data is neutral. 4% and 17% of respondents have a negative and rather negative than positive attitude to the use of personal data, respectively (Figure 11). The survey results show a relatively high level of citizens' confidence to the use of personal data by government agencies.
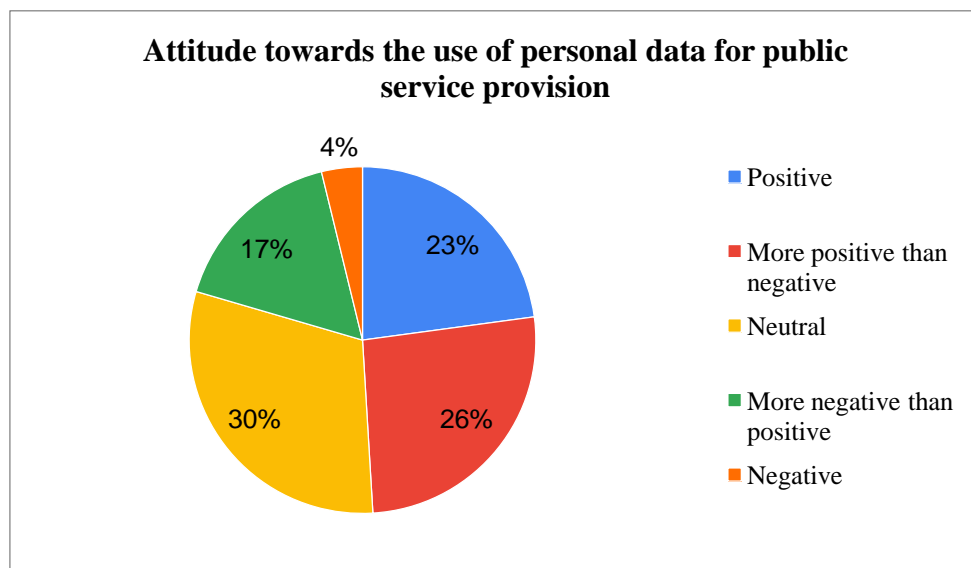
Figure 11. Attitude towards the use of personal data for public service provision.

The majority of respondents (80%) use the E-Government web portal to receive government services. The share of those who do not use the E-Government portal is much lower - 20% (Figure 12).
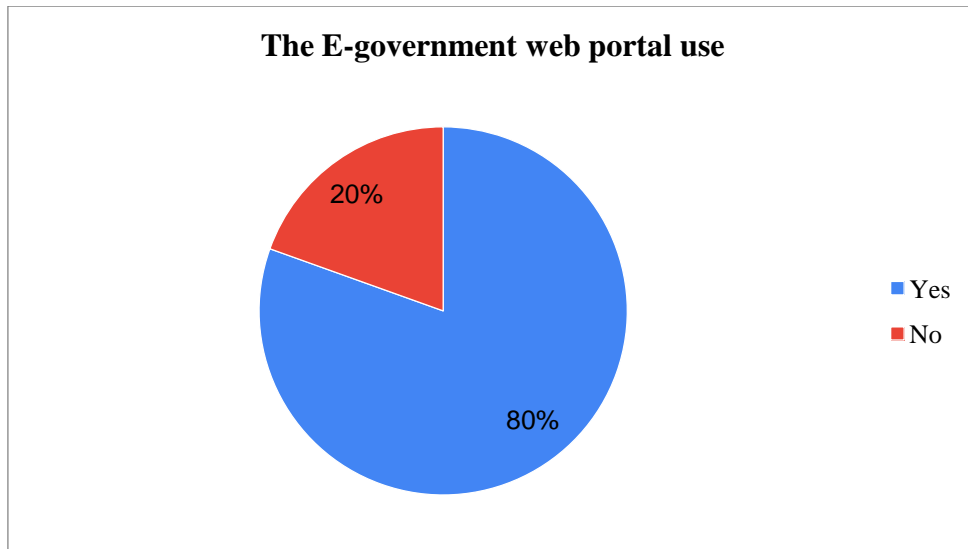
Figure 12. The E-Government portal use.

For a more detailed identification of the reasons why respondents do not use the E-Government portal to receive public services, the respondents were asked the following question. One of the reasons indicated by the respondents who do not use the E-Government web portal was that the portal works slow (38%). The respondents indicated that the portal is inconvenient to use (28%), and it is difficult to find and receive the necessary service (26%). One of the reasons noted by the respondents was the lack of access to the Internet (8%) (Figure 13).
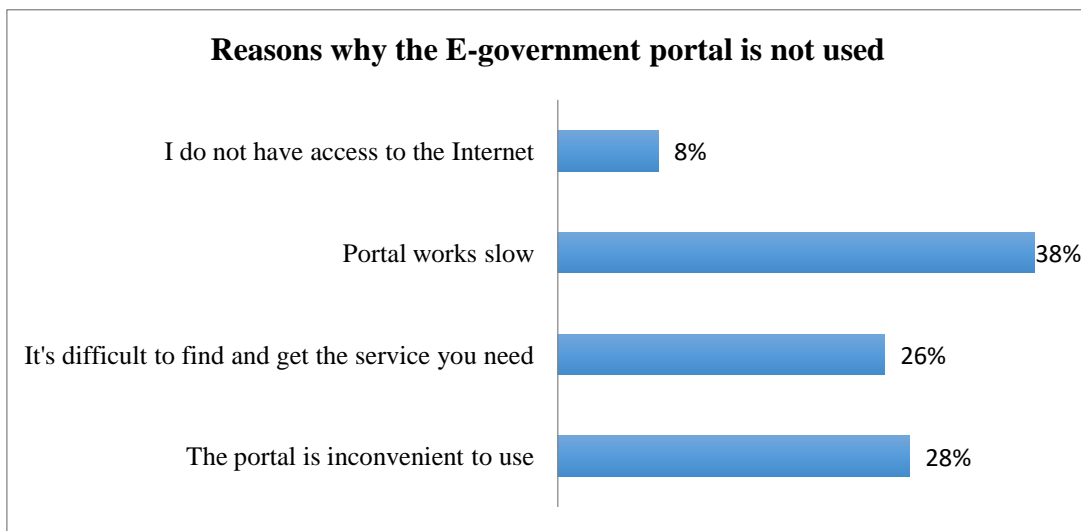
Figure 13. Reasons why E-Government portal is not used.

As measures to improve the quality of public service provision, the respondents selected all options in approximately the same proportion: increasing the security level/confidentiality of data transmission (25%), increasing awareness of the E-

Government possibilities (22%), simplifying the process of E-Government portal use (19 %), availability of personal assistance during obtaining electronic services (17%), and simplification of administrative procedures (17%) (Figure 14).
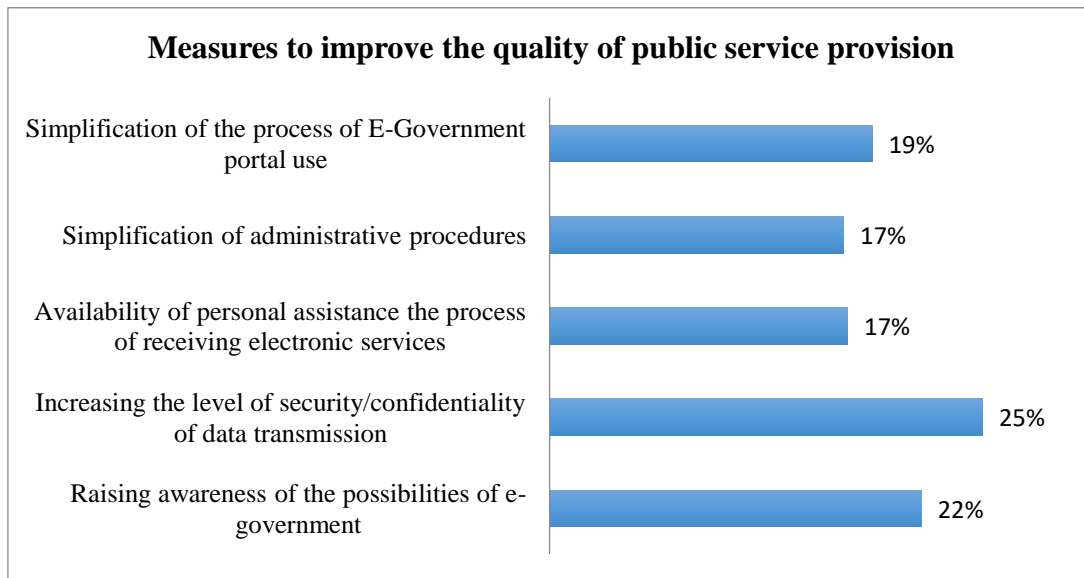
Measures to improve the quality of public service provision

Measure	Percentage
Simplification of the process of E-Government portal use	19%
Simplification of administrative procedures	17%
Availability of personal assistance the process of receiving electronic services	17%
Increasing the level of security/confidentiality of data transmission	25%
Raising awareness of the possibilities of e-government	22%

Figure 14. Measures to improve the quality of public service provision.

The next question assessed the respondents' awareness of security mechanisms when receiving public services on the Internet. 41% of respondents are aware of security mechanisms. 59% of respondents are not aware of security mechanisms when receiving government services on the Internet (Figure 15).

Awareness of security mechanisms

- 41% Yes
- 59% No
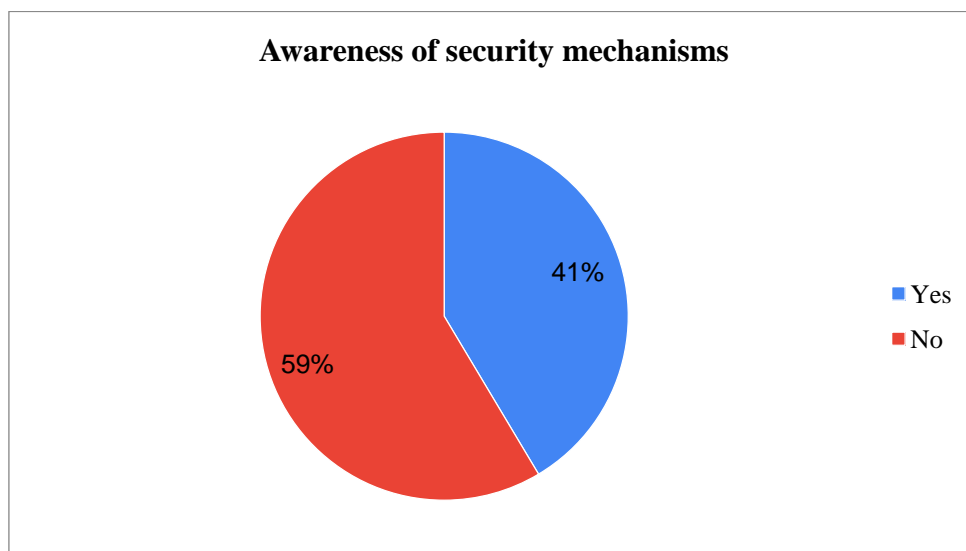
Figure 15. Awareness of security mechanisms.

The purpose of obtaining answers to the three final questions of the survey was to identify the readiness of citizens to receive proactive public services. The survey results showed a low level of respondents' awareness about proactive public services: 73% of respondents were not aware of proactive services, 27% were aware of such services (Figure 16).
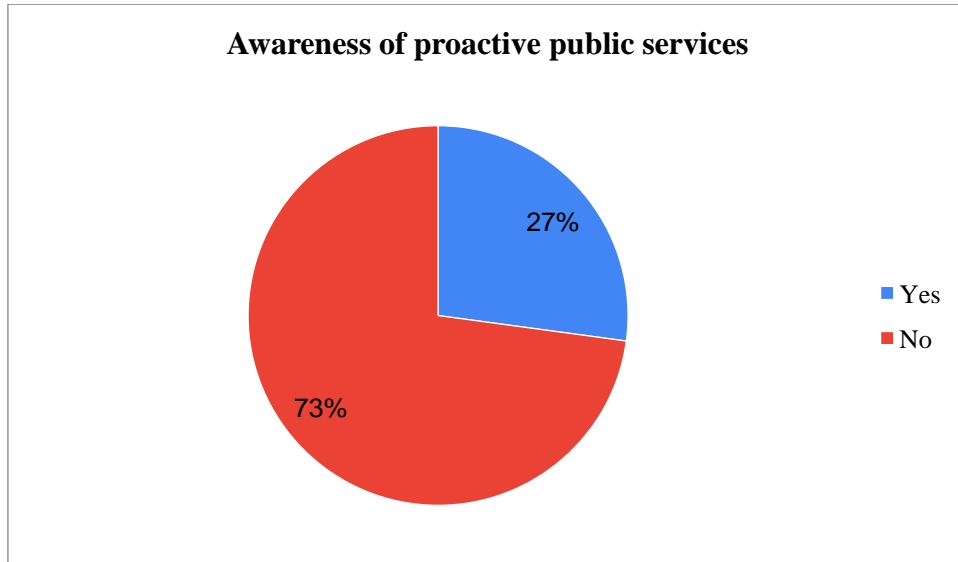
Figure 16. Awareness of proactive public services.

Only 14% of respondents received proactive public services, the majority (73%) did not receive proactive public services (Figure 17).
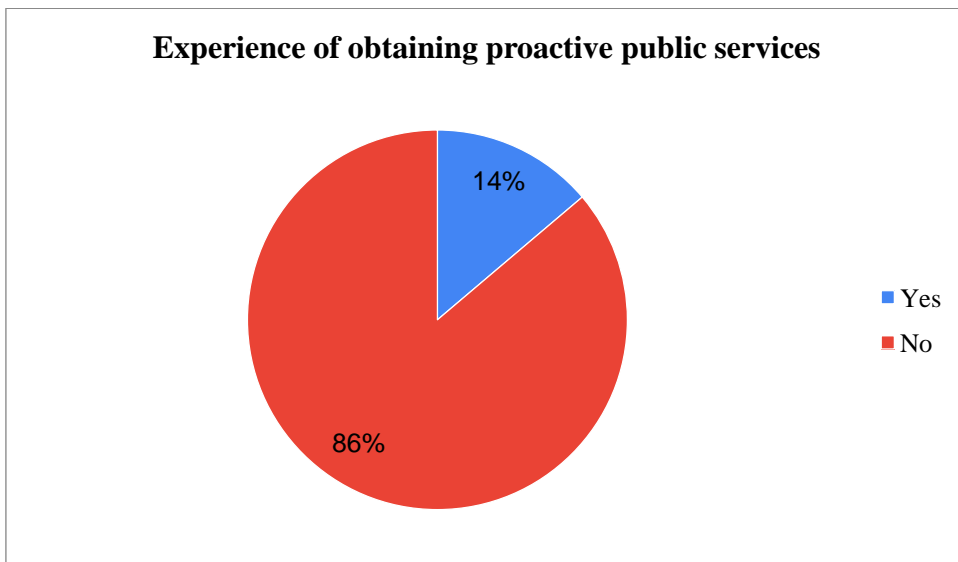
Figure 17. Experience in obtaining proactive public services.

The majority of survey participants (76%) answered that they would consent to receive a proactive public service if it would be offered to them via SMS. 24% of respondents reported that they would not consent to receive a proactive public service (Figure 18).
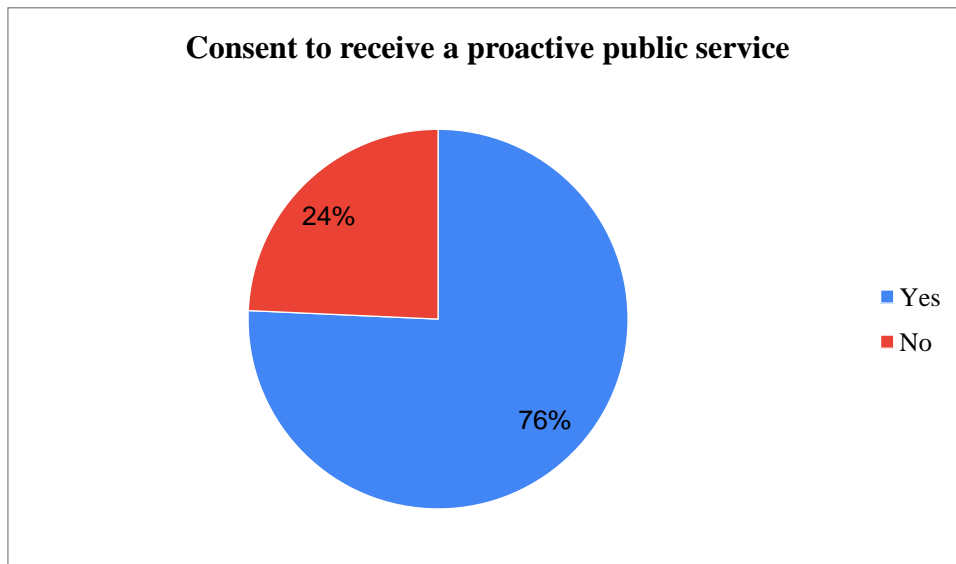
Figure 18. Consent to receive a proactive public service.

One of the reasons for a positive answer to the question of granting consent to receive a proactive public service may be the relatively high level of citizens' confidence in the use of personal data by state bodies confirmed above.

The results of the survey revealed the need to simplify the processes of using the E-Government portal. Despite the fact that the majority of respondents confirmed the use of the E-Government portal, the respondents also indicated the need to raise awareness of the possibilities of E-Government, simplify the process of using the E-Government portal, and provide personal assistance during obtaining e-services.

The survey showed a low level of citizens' awareness about the proactive format of service provision, which implies to the need of informing the population about the possibility of receiving certain services in a proactive format.

The results of the survey showed that respondents are ready to accept a public service if it is offered to them via SMS in a proactive format. However, the level of satisfaction with the quality of public service delivery indicates that there is a necessity to improve the processes of public service delivery, taking into account the real needs of citizens.

The author of the current master thesis compared the results of this survey with the results of the Public Monitoring of Public Service Provision Quality, conducted from September to December 2019, which was initiated by the Agency for Civil Service Affairs of the Republic of Kazakhstan. Based on the results of public monitoring, problematic issues in public service provision were identified and recommendations were made to improve the quality of public services (Zor Rukh Private Foundation, 2019).

Several recommendations of the report correlate with the findings of the current master thesis survey. First, the results of public monitoring confirmed the need to simplify administrative procedures and reduce barriers. According to provided information there, citizens have to visit the public organization in person, bring documents and receive the result of the service, even if the application submission is carried out electronically (Zor Rukh Private Foundation, 2019).

Second, the results of the Public Monitoring revealed the necessity to provide information on the business processes of public services provided for citizens' convenience (Zor Rukh Private Foundation, 2019).

Third, the results of public monitoring touched upon the need to simplify the names of public services for citizens' convenience, which complies with the Life Events approach.

The results of public monitoring touched upon the issues of citizen-centricity in the process of public service provision. An introduction of clear and simple mechanisms for filing complaints, recommendations, and suggestions was proposed (Zor Rukh Private Foundation, 2019).

Conducting mass informational activities aimed at learning the skills needed for obtaining public service online or through mobile applications was proposed by the recommendations presented in public monitoring report (Zor Rukh Private Foundation, 2019).

4.2 Interview results and analysis

With the aim to collect the view from the practical side of public service transformation (based on optimization and digitization of processes), the author conducted individual semi-structured interviews.

As the desk study of documentation, available publications, and academic writings of E-Governance development in Kazakhstan has shown that the technical foundation for proactive service provision is developed enough, the author of the current thesis decided that it is necessary to focus on legal, methodological, and social aspects. More particularly, factors related to change management.

Experts for interviews were chosen based on their field of activity and projects their working on, as they are related to the research for the current thesis. Publicly available information on current work on public services was analyzed, and experts were chosen based on the analysis. Interviews were conducted with government representatives, project managers, IT managers experienced in working on public service development projects. An overview of the interviewees is presented in the table below:

Table 3. The list of interviewees.

	The organization represented by an interviewee	Interviewee's name	Interviewee's position	Interview date	Interview duration
1	JSC National Information Technologies	Akhmadaliyeva N.E.	Project Manager of the E-government Support Department	8.04.2021	15 min
2	MLSPP	Meirbekov M.M.	The Head of Optimization and Automation of Public Services Department	10.04.2021	51 min
3	Government for citizens State Corporation	Kershin A.Zh.	The Head of Digitalization Office	13.04.2021	27 min
4	Zerde Infocommunication	Irbatyrov R.	Reengineering Center	16.04.2021	25 min

	Holding		Specialist		
5	JSC State Social Insurance Fund	Kemel N.	Deputy General Director	26.04.2021	written answer
6	MLSPP	Iralimov D.M.	The Head of the Digitalization Department	28.04.2021	22 min
7	Agency for Civil Service Affairs	Gubaidullayev M.	Public Services Department Chief Consultant	04.05.2021	20 min

Interviews from experts were taken considering the necessity to receive experts' opinion from different perspectives: technical, service provision, quality of public service provision, business process reengineering.

In order to obtain information concerning the technological prerequisites for proactive public service provision, the first interview was conducted with the representative of JSC National Information Technologies.

The second interview was conducted with the representative of Optimization and Automation of Public Services Department of the MLSPP. The tasks of the Department include ensuring the optimization and automation of the process of public service provision of the Ministry. The functions of the Department include the coordination of roadmaps and action plans for the optimization and automation of public services of the Ministry with stakeholders, coordination of work on the automation of state functions for the provision of public services in the field of labor relations and social protection of the population, development of proposals for the automation and optimization of public services for submission to the interdepartmental commission for consideration (MLSPP, 2021). The representative of MLSPP was interviewed based on the fact, that social sector services are being digitized more actively compared to other public sectors' services, as they have already started proactive public service provision.

The representative of National Information Technologies covered technical aspects for developing proactive services. Following that, interview was conducted with the representative of Government for citizens State Corporation.

The representative of Government for Citizens State Corporation gave the view from the public service provision agency, interacting directly with citizens. Government for citizens State Corporation is a single provider that carries out activities on public service provision to individuals and (or) legal entities based on the single window concept (GCSC, 2021).

The necessity to reengineer the business processes of government agencies was emphasized by the Minister of Digital Development, Innovations and Aerospace Industry Magdat Musin in 2020. The Ministry is planning to systematize IT systems of public institutions, as there is a necessity for an audit to be carried out. According to the minister, there are some information systems that are outdated, no longer used or do not meet the user requirements. In order to solve the abovementioned issues the Ministry created an Engineering and Digital Transformation Center (Kazinform, 2020b). Thus, the representative of the Center for Digital Transformation was interviewed in order to find out the current work processes implemented by the Center. The Center for Digital Transformation was created on November 24, 2020 as a structural subdivision of the JSC National Infocommunication Holding Zerde. The center provides services for describing the business processes of government bodies within the framework of life events of citizens and business (G2C), as well as describing the business processes of government bodies (G2G). The selection of life events is carried out taking into account their significance for citizens, social effect, and the number of service recipients (Zerde, 2021b).

The representative of JSC State Social Insurance Fund as the main provider of social services covered the aspects of proactive format for applying for social payments, providing that information in letter sent via e-mail.

The representative of Digital Transformation Department of MLSPP was interviewed in order to acquire information on the activities carried out on several projects, particularly Digital Family Card, which obstacles occurred during the project development and implementation phases, and what are the future plans of the Ministry in digitizing social sector. As it was mentioned before, Social Family Card project is aimed at identification of families in difficult life situations, followed by comprehensive social support measures provided proactively. Along with providing information on project results,

interviewee provided the answers on the aspects of proactive service provision in social sector.

The representative of Agency for Civil Service Affairs covered the issue from the broader perspective, more related to the quality of public service provision and the readiness of public agencies to provide services proactively. Agency for Civil Service Affairs has a subdivision that carries out an assessment and of the quality public service provision, controls the quality of public service provision, in charge of the development of measures aimed at improving procedures for public service provision (ACSA, 2021a).

When providing answers to interview questions, experts fully and in detail covered the issues under consideration, touching upon various aspects of the progress reached so far and drawbacks related to activities being carried out. The author of current thesis appreciates the openness and honest opinion provided by experts during the interview process, as it allowed to gain valuable insights for the research. Acknowledging the drawbacks and revealing potential obstacles is important as it serves as a foundation towards further development.

Interview results showed the readiness of the public sector to further modernize the process of public service provision in Kazakhstan. The interviews were conducted to analyze the readiness of Kazakhstan public sector to introduce proactive public services. The interview questions were aimed at addressing the aspects of introducing proactive services in Kazakhstan: requirements for state electronic services, public service quality improvement process, the level of interoperability between the information systems of state bodies, the compliance of the existing processes of public service provision with the needs of citizens, studying the needs of citizens when optimizing business processes for the provision of public services, Kazakhstan citizens perception towards receiving services in proactive format, the legislation impact on the implementation of a full-fledged transition to the provision of public services in a proactive format, obstacles that may arise during implementation of a full-fledged transition to the provision of public services in a proactive format.

In general, experts note a suitable level of public sector technical readiness for transition to proactive service provision, since the level of integration of information systems of

state bodies allows the exchange of the necessary data. In addition, the launch of the Smart Bridge project has simplified the process of integrating information systems of government agencies. Experts emphasized that the coordination of state bodies is being carried out without hindrance within the framework of the Interdepartmental Commission, where public service digitalization issues are being discussed. Experts noted that a proactive format of public service provision is convenient for citizens, but informational coverage is needed in order to familiarize citizens with the new format of receiving services.

Interviews revealed the readiness of public sector to improve the processes of public service provision. It was pointed out that the legislation allows further improvement of public service provision processes. Interview results show that state bodies have all the necessary tools for further improvement of public service provision processes.

Respondents emphasized the necessity to reengineer business processes, the need to further improve the digital literacy of population, and further study citizens' needs in order to improve the provision of public services, taking into account the needs of various groups of population.

4.2.1 Interoperability of public agencies information systems

All experts noted the high level of interoperability between information systems of state bodies, which is suitable for the provision of public services in a proactive format. Experts pointed out that the integration process was facilitated by the launch of the Smart Bridge project.

In particular, a representative of the State Corporation for Citizens noted the following:

"Now almost all information systems are integrated with each other through the e-government gateway. Therefore, in general, the introduction of Smart Bridge project allows the business community and government agencies to connect to certain services directly through Smart Bridge ... Therefore, I think that we will not have any problems with the transition to proactive services. On the contrary, it makes people's life much easier."

The representative of NIT pointed out the similar view on interoperability:

"Integration between other systems of state bodies and egov.kz is carried out through the e-government gateway. There is rule 123 On the interaction of e-government components. According to it, all interaction must be carried out through an e-government gateway."

She also supplemented the answer with the following information:

"To integrate systems, Smart Bridge was launched at egov.kz. It turns out that currently we have simplified the possibility of applying for integration through Smart Bridge. Most of the services of state bodies are already there and they are implemented on the basis of 123 Rule."

The representative of Labor Ministry noted the following:

"When digitalizing a public service, and automating appointment processes - the integration of state bodies, interaction of state bodies is always required. And here it is important that interaction is carried out. In order to carry out integration, each state body must digitize the data they have."

The representative of Reengineering Center pointed out the following:

"Generally speaking, the integration of government agencies for the provision of government services is well-built so that people can receive government services in a timely manner."

Also, Reengineering Center's representative touched upon aspects of public systems integration with the business sector. Expert covered the requirements for the private sector for the data exchange process:

"Today the principle of Yellow Pages is being implemented ... And, the services rendered, for example, earlier by the state, may be transferred to the market. Regarding integration requirements: there are security requirements. There are rules, uniform requirements for information security, which regulate certain points in order to obtain permission to integrate, to say, private service with a state one ... Unfortunately, yes, today, perhaps, not all IT companies comply with these security requirements."

4.2.2 Availability of data in public agencies' information systems

Most experts noted that one of the aspects for further improvement of public service provision process is the availability of data in information systems.

Thus, the NIT representative noted the following:

"Technical readiness is in the availability of information in the information systems of state bodies. So that the information necessary for any state bodies is available in the relevant systems of state bodies."

A representative of the Ministry of Labor pointed out the need for government agencies to digitize data to further improve public service provision process. For instance, the pension appointment. Since there is a necessity to obtain information about Labor activity from the Labor book of a citizen in order to assign a pension to a person. The process can be complicated if the data on Labor activity is not readable in the Labor book. In such cases, archived data is required. The interviewee mentioned that the work on digitizing archives is being carried out by the Archives Committee of the Ministry of Culture in the e-archive information system. The expert also provided information on e-HR system, the Unified System for Recording Employment Contracts, which aims at digitizing data on Labor activity. This project is being carried out to simplify the process of assigning a pension:

"Now the process of current Labor contracts digitization is being carried out. And the archival data will be provided by Ministry of Culture".

4.2.3 Public agencies' work processes coordination

The experts emphasized the simplification of the processes of interaction and coordination of state bodies within the framework of activities carried out within the Interdepartmental Commission on Public Services Automation.

A representative of the Ministry of Labor emphasized the work of Interdepartmental Commission in the process of interaction between state bodies:

"We have an Interdepartmental Commission for the Automation of Public Services. The working body of this commission is MDDIAI. Chairman of the Interdepartmental

Commission - Minister of MDDIAI, B.B. Musin. Meetings of this commission are being held at least once a month, where various issues are being considered.”

The representative of the State Corporation for Citizens covered the details of the Interdepartmental Commission's work aimed at public service provision:

“The interdepartmental commission includes representatives of authorized bodies, representatives of business community, or activists who develop certain proposals at meetings. The meeting of the interdepartmental commission is finalized by the Roadmap design, which provides further steps.”

The representative of Reengineering Center covered the aspects of working on reengineering of business processes with supervising CDOs in industry areas:

“Each central government body has a responsible vice minister in charge of digitalization issues, CDO. Any ministry in Kazakhstan has a vice minister for digitalization. Zerde Holding Joint Stock Company is a subsidiary of the Ministry of Digital Development. Together with our ministry, we are working on issues with supervising CDOs in sectoral areas.”

The expert explained how the process is being carried out further:

“With CDO, the issue is being worked out, responsible persons are appointed, a temporary cross-team is formed from among the employees of the Center and from among the employees of the authorized body. And already based on the experience of a representative of a state body, all possible nuances, problem areas are taken into account, following that appropriate recommendations are being worked out by the Center [of reengineering].”

4.2.4 Public service quality improvement process

The experts covered the public service quality improvement process, pointing out the current stage of work in certain areas.

The representative of NIT noted some aspects that need to be taken into account when making the transition to the provision of services in a proactive format:

"There are different services, a separate emphasis on each service should be put. In my opinion, there is a need to look through the services provided by government agencies, which of them can be transferred to a proactive format, and which are impossible to transfer."

The representative of the State Corporation for Citizens mentioned the fact that in order to simplify the process of public service provision, the data should be used comprehensively. He emphasized that activities will be carried out further in that direction:

"In this direction, work will be constantly carried out to reduce the number of people walking and to simplify the process of service provision. Full-fledged proactive provision is when a person does not participate in the process of service provision at all."

The expert also said that the quality of service provision is being improved by the means of data from information systems for monitoring that is sent to the Agency for Civil Service Affairs:

"Almost all services are monitored at the state level. Previously, for example, when there were paper services, respectively, they could not be monitored."

According to the Law on Public Services, the Agency for Civil Service Affairs annually conducts public monitoring of the quality of public service provision. Based on the monitoring results, the Agency for Civil Service Affairs makes recommendations to government bodies to improve the processes of public service provision. The representative of the Agency for Civil Service Affairs provided information on further activities carried out by government agencies:

"As a result, government bodies adopt plans and take measures to improve the quality. Following that, they inform us on the activities they carried out and events they had."

Representatives of the State Social Insurance Fund provided information on the proactive format for assigning social benefits:

"Since 2018, a proactive format has been introduced for assigning social benefits for caring for a child upon reaching the age of 1 year from the State Social Insurance Fund

in order to improve the conditions for applying for payments. After the childbirth, a woman receives an SMS message on her mobile phone about the possibility of receiving a payment. If the answer is yes, she will be asked for her bank account details.

Starting from 2020, a proactive format for assigning social benefits has been introduced in cases of disability, loss of a breadwinner and loss of work from the State Social Insurance Fund. Based on the information received from the information systems, the SSIF makes a decision on the appointment of social benefits. At the same time, the process of consideration of electronic documents and information is carried out in the same manner as in the traditional methods of applying, that is, there is no additional burden on the SSIF employees."

4.2.5 Government bodies' business processes reengineering

The representative of Reengineering Center covered the aspects of business process reengineering based on Life Events. The expert explained that various methods are being used by experts for analyzing the current processes, such as interviews, surveys, through focus groups. During analytical work, experts identify problematic issues that require more in-depth study.

The expert also indicated further the government bodies business processes reengineering procedures:

"In order to carry out reengineering, or optimization, it is necessary to understand a number of conditions. In accordance with the methodology developed by our employees, we conduct analysis and give specific suggestions, that is, whether it is possible to automate current activities through existing information systems. This is the first thing. Second, how important are the steps in the business process to us in order to implement this or other services. And third, the duration of each step of the business process. And everything in total leads to the fact that we alienate some steps, and in return offer some new ones."

The representative of the Ministry of Labor (Digital Transformation Department) provided information on the approach to business process reengineering implemented in the Ministry:

"In general, we have a single approach to all digital projects. We have a methodological unit, that is, the Department of Social Assistance, and there is a Digital Unit. We join our efforts. They tell us how it should work, at the same time we say how much it is possible to introduce it into the system."

The representative of the Ministry of Labor emphasized that the process of launching proactive services has begun, and the issue of certain processes reengineering is being considered:

"Now the Ministry together with MDDIAI, NAO [Government for Citizens State Corporation], relevant government agencies, JSC NIT is considering the issue of proactive services provision process reengineering. But, in general, speaking about proactive services, we have begun the process of proactive service launching. Accordingly, any beginning, any new format, requires refinement and updates over time. I think currently such a process is under way."

Also, a representative of the Ministry of Labor covered the work on the digitization of assigning pensions and benefits, which is being carried out by state bodies, which was raised by the President on September 1, 2020.

"We are now in the framework of this instruction, and in general, and before that, this work was carried out. Now, within the framework of the Presidential Order, the work of state bodies has been accelerated in general, and work is underway in this direction. Various options of business process reengineering are being considered."

Similarly, the representative of the Ministry of Labor (Digital Transformation Department) pointed out the need to optimize proactive services that were launched by the Ministry:

"We realized that they are inconvenient, and currently we are working together to optimize these services."

He added that currently, priority is on enhancing the quality of services:

"We will work on the quality of service provision. In general, to prioritize the provision of services without application."

The representative of NIT noted that the business processes of public services on the egov.kz portal are developed by the relevant government bodies:

"All government services that are provided on egov.kz are provided jointly with the Ministry of Labor and Social Protection. It turns out that business processes for any service are being worked out with the appropriate methodologists in conjunction with government agencies."

The representative of the State Corporation covered the work of the Interdepartmental Commission on the provision of services:

"We have an interdepartmental commission on the provision of services, which constantly analyzes services. Let's say they are looking at statistics: some service is popular, but people still go to PSCs. And we are already looking to see if this service can be automated so that people stop going to public service centers. Accordingly, as I said at the beginning, there is already a process of working out, analyzing the service, so that later it can be automated, either transferred into an electronic format, or even into a proactive format."

The expert also mentioned the activities carried out by digital commissioners who are a part of the above-mentioned commission:

"The digital commissioners are ordinary people who were included in the interdepartmental commission, who are representatives of the people. They can already make suggestions from people, and comment that some service is inconvenient, that service is unpopular, or the time frame needs to be shortened, or unnecessary documents are required. Therefore, overall, the proposals of citizens are always taken into account."

Representatives of the State Social Insurance Fund reported on the activities that are being carried out to transfer social services to a proactive format:

"Currently, the SSIF is working on the transition to the appointment of social benefits for pregnancy and childbirth in a proactive format. For this, the issue of issuing sick leave for pregnancy and childbirth in electronic format is being worked out."

4.2.6 Compliance of public service delivery processes with citizens' needs

The representative of Reengineering Center, in response to a question about whether the needs of citizens are taken into account in the implementation of reengineering of business processes, noted that business process reengineering takes into account the needs of citizens by conducting focus groups with public associations:

"For a clearer formalization of the problem, we are discussing these issues with various Associations. We directly proceed from the needs of citizens, from their satisfaction with the public service provision. And we conduct focus groups with public associations, which may have already worked out, and have the experience in problem situations from a service recipient point of view."

The answer of the representative of the State Corporation for Citizens correlated with survey results presented later in the study. Survey results revealed that citizens perceive services on the e-government portal is not easy to obtain, thus there is a need to simplify the electronic format for receiving services.

The representative of the State Corporation for Citizens noted that there is a need to simplify the format of receiving services:

"Unfortunately, not all services are clear and convenient for users, including those on the e-government portal. But there is constant work in this direction. There is a special working group. Let's say we are launching a service and analysis is in progress. We look at whether people are using or not using, and how convenient this service is ... Therefore, we are already trying to implement services in the simplest way possible."

The representative of the Agency for Civil Service Affairs provided information on the activities being carried out as the response to the pandemic and subsequent demand to provide services electronically through the E-Government portal. According to the expert, relevant measures were proposed by the MDDIAI to provide the possibility for multi-channel service provision, affording various alternatives for obtaining public services:

"The [citizens'] needs in 2020 were clearly expressed when the pandemic began when people switched to electronic services. There were loads on the portal, and people wanted to receive services quickly, and electronically." The expert emphasized that the

need to quickly receive public services was addressed by multi-channel service provision.

In addition, the expert provided information on the recently released project called Tyndau. The project is aimed to receive feedback from citizens. After facing an obstacle while obtaining an electronic public service, the citizen can provide relevant feedback through that portal. The feedback is provided to the relevant public bodies for measures to be taken.

4.2.7 Impact of legislation on the transition to Proactive public service provision

Experts indicated that the current legislation supports the transition to proactive public service provision.

A representative of the State Corporation for Citizens noted the following:

"In short, practically all legislative norms do not prohibit the transition to proactive format. On the contrary, they create conditions for us to move to this format."

A representative of the Ministry of Labor noted that changes were made to the legislation where the concept and format of proactive services were included in the legislation:

"The Law on Amendments to Certain Legislative Acts of the Republic of Kazakhstan in terms of public services was signed on November 25, 2019. Among other things, I would like to note that the concept of "proactive services" along with proactive service format, have been introduced into this Law. As I said, the proactive service format is a new one, introduced only in 2018, being launched in pilot mode first, following by orders of government agencies."

4.2.8 Kazakhstan citizens perception towards receiving services in the proactive format

The author of the current thesis asked this question from a representative of the Ministry of Labor and a representative of the State Corporation, since these organizations are involved in building the processes of service provision to citizens, and interact with citizens through service delivery units.

The representative of the Ministry of Labor noted the low level of awareness of citizens about proactive services since the transition to the provision of services in a proactive format was carried out relatively recently:

"We started implementing proactive services in 2018. It is a new format of service provision. So far, only 2-3 years have passed, perhaps our citizens - service recipients are not yet accustomed to this format of service provision."

At the same time, he also noted that such a format would be more convenient for citizens:

"But, in general, the proactive format of public service provision will be much more convenient for service recipients if they understand the whole process of it. We are moving towards this now. If possible, we want to shorten the process of rendering the service."

In addition, the expert emphasized that in the future, informational campaigns will be carried out to familiarize citizens with the possibility of receiving public services in a proactive format:

"As statistics show, in general, people receive this service, even if in smaller quantities. But we will carry out informational campaigns over time. Currently people already know that services are rendered via SMS."

The representative of the State Corporation for Citizens pointed out that proactive service provision is more convenient to citizens, as this format is simple and effective:

"Regarding the readiness of citizens: definitely people will be only happy if there are more proactive services: convenient, simple, and effective."

Representatives of the State Social Insurance Fund confirmed the convenience of a proactive format for citizens and highlighted the increase in its usage compared to 2019:

"Citizens of Kazakhstan use a proactive format for applying for payments, as it is convenient and there is no need to visit various organizations. The main conditions for the provision of such services are the integration of information systems of state bodies and organizations, as well as registration of a cellular number in the Mobile Citizens

Base. In 2020, the share of services provided in a proactive format reached 10% against 2.7% in 2019."

In contrast, the representative of the Ministry of Labor (Digital Transformation Department) noticed that citizens are not quite ready yet, as the services require reengineering. In addition to that, he pointed out that citizens will use it, if it is convenient:

"If it is so convenient, then, I think, there will be no obstacles. Currently, there are many SMS, many questions, and sometimes a lack of data about a person in the databases. Therefore, a person is rejecting it."

4.2.9 Obstacles that may arise during the full-fledged transition to proactive public service provision

The representative of Reengineering Center suggested that a comprehensive study of the needs of citizens is necessary in order to take into account the interests of all categories of citizens:

"The main thing is to understand the needs of citizens, what exactly people want today. That is, the main thing in the work is to approach it in detail, and to study the opinion of society thoroughly, in order not to cover the interests of certain categories of citizens."

The expert highlighted the necessity to take into account various aspects when designing the services, such as remote areas specificities, economic needs, etc. Further, the expert stated the following:

"Therefore, it is necessary, as I said earlier, to affect the interests of all categories of citizens from all corners of our country. In order to make it convenient for literally all citizens, whose issue we are solving today."

At the same time, the representative of the State Corporation for Citizens noted that as public services are being transferred to electronic format, citizens still prefer to receive services coming to PSCs. The expert sees the need to increase the level of digital literacy of the population:

"An active work is required to raise digital literacy. Local executive bodies are already working in this direction. And in general, we organize training in our PSCs at our level.

There is a special class of training, usually, seminars are held for people lacking the skills in computer technology. We train them to receive services."

Also, a representative of the State Corporation revealed the work of digital public service centers, where citizens can get consultations on the process of obtaining public services online. He explained that the specialists there provide comprehensive information on the process for receiving particular public services. He mentioned that usually, citizens who received the consultation once do not visit the digital public service center the second time.

The representative of the Ministry of Labor (Digital Transformation Department) provided information from practice that arose during the work on Social Family Cards project:

"The obstacles, in my opinion, are in filling the databases. It is the first obstacle concerning the digital side."

The interviewee also pointed out that when it comes to Social Family Card project development, experts experienced the lack of interest from other public agencies and unwillingness from the population to receive services provided:

"The population itself is probably not ready. They don't take it as a desire to help. Therefore, we always focus on the fact that the system itself automatically detects [the need]."

In addition, the Agency for Civil Service Affairs representative's viewpoint can be provided further:

"The obstacles can be in the fact that people may reluctantly want to receive these services. Overall, the systems are ready, as the state bodies, and the legislation."

A representative of the Ministry of Labor highlighted the possibility of solving obstacles through discussions with interested government bodies:

"To be honest, I don't see any pivotal obstacles. Currently, there should be no obstacles as they could be solved through discussion together with the interested state bodies."

4.3 Analysis and discussion

The results of interviews conducted with experts and surveys conducted from Kazakhstan citizens revealed a number of insights. Kazakhstan has already developed the technical infrastructure that allows aiming for further progress in public service provision. The issues that need first to be tackled are user-centricity, data quality, and data availability in data-bases.

Answers from experts mostly went in line with the answers provided by respondents. Along with that, the results of the survey and expert interviews were compared to the Results of public monitoring on the quality of public service provision released in 2020. The current thesis survey results correlate with the recommendations provided by the report on Public Monitoring.

According to the report, it was recommended to provide services on online resources in a simple and accessible way, so that the information can be easily understood by the population. Report results recommended to increase the nativeness of the service interface, simplify instructions, and improve the technical support. The low popularity of the electronic format of service provision is associated with an abundance of technical problems and procedural difficulties when working with the portal (ACSA, 2021b). Expert interview and survey results also show that difficulties in obtaining public services can reduce citizens' motives to receive services in an electronic or proactive format.

Recommendations based on survey and expert interview results on the need to inform the population were also similar to those provided in the report on Public Monitoring. The report recommended providing webinars for citizens, creating training videos on using the web portal to obtain a specific public service (ACSA, 2021b).

5 Summary

The research aimed to investigate the perspectives of proactive public service implementation in Kazakhstan. The main question of the current master thesis was the following: How to implement proactive public services in Kazakhstan?

Current master thesis results clearly illustrate that proactivity in public service provision requires technical readiness of government agencies, which implies the interoperability between state registries, availability of required amount of data, well-established and comprehensively designed business processes. The results indicate that the transition to proactive public service provision requires an integrated approach.

First, technical readiness of state bodies and information systems, followed by the integration of information systems of state bodies, a sufficient amount of information about citizens, the accuracy and relevance of data. It also requires a well-functioning process of interaction between government officials, readiness for changes of processes. Second, a detailed study of business processes using Service Design methods is required, examining the citizens' needs, possible scenarios for the development of Life Events. Additionally, the aspects of interaction with the population should be addressed: informing citizens, increasing the level of digital literacy of the population, the availability to provide feedback to government agencies is required.

Current research findings provided an answer to sub-question on the current situation with existing public services in Kazakhstan along with answering the sub-question aimed at investigating the perspectives for implementing proactive public services in Kazakhstan. Based on quantitative and qualitative analysis it can be concluded that the transition to proactive service provision requires holistic and large-scale efforts from the public sector side. Subsequently, the efforts accomplished by the public sector will considerably ease citizens' lives.

The answers to other sub-questions determined the necessary steps that need to be considered for creating proactive public services, along with the existing requirements for public service design.

The results of research have shown that Kazakhstan has already developed the technical infrastructure that allows aiming for further progress in public service provision. The legislation allows further improvement of public service provision processes. State bodies have all the necessary tools for further improvement of public service provision processes. The issues that need to be considered are user-centricity, data quality, and data availability in data-bases.

Service providers are lacking detailed information on citizens' needs when experiencing a Life Event. Thus, design-led methods for user research, journey mapping are proposed for achieving a closer connection between service providers and citizens receiving public service, especially proactive ones.

The intention to switch service providers to electronic and proactive format in Kazakhstan is fruitful since in order to achieve it all business processes must be clearly built, based on the needs of citizens. On the other hand, the complete transition requires rising the digital literacy level of all age groups of the Kazakhstan population. This requires complex work not only from government agencies' side but also the readiness of citizens to raise digital literacy.

Current research findings confirm existing theories on technology acceptance. The ease of use should be addressed, a detailed study of service provision processes can advance the quality of service provision. If through proactivity, public services are provided conveniently and all the necessary processes are worked out in detail, then citizens will be ready to accept this format of service provision.

On the one hand, the move to proactive services will provide the transition that the MDDIAI is aiming at – diminishing the physical provision of public services in front offices. On the other hand, proactive services require a detailed study of business processes that must be addressed first by government agencies.

Current thesis provided a foundation for the research on proactive public service provision in Kazakhstan and implementing the provision of next-generation public

services. Further research could be concentrated on particular public services which are being optimized by public bodies in Kazakhstan, applying service design methods presented in current thesis. The quality of particular public service provision also could be researched further.

5.1 Recommendations

Based on the current thesis' conclusions, practitioners should consider the following aspects for further improvement of public service provision and transition to proactive public service delivery.

The first is that proactive public services should be implemented in Kazakhstan further, using service design methods. In order to tackle the obstacles mentioned above, it is essential to design the services that meet citizens' needs.

Second, the quality of public services should be addressed before deciding on proactivity. Citizens should see the perceptible benefits from proactive public service provision. The ease of use should aim at transforming citizens' perception towards public services, as citizens' would not consider proactive services as a burden.

Third, user-centricity should be further considered as the main objective when working on public services. Profiling approaches should be used, and user profiles should be formed.

Finally, trust towards public entities should be aimed further. Trust towards electronic public service provision will grow if citizens can monitor how their data is used by service providers.

The multi-channel approach of public service provision should be adhered to further, as citizens may lack the digital literacy necessary for receiving services through online channels. Citizens' digital literacy should be aimed concurrently with the public service digitalization process.

References

Abdelghany, H., El-Bastawissy, A., Osman M. (2016). E-Government multi-layers Maturity Model. *12th International Computer Engineering Conference*, 83-92. 10.1109/ICENCO.2016.7856450

Adams, W.C. (2015). Conducting Semi-Structured Interviews. *Handbook of Practical Program Evaluation*, 492-505. https://doi.org/10.1002/9781119171386.ch19

Agency for Civil Service Affairs (2021a). Department of Public Services. Available https://www.gov.kz/memleket/entities/qyzmet/about/structure/departments/activity/1613/1?lang=ru accessed 10.03.2021

Agency for Civil Service Affairs (2021b). Results of public monitoring of the assessment of the quality of public service provision. Available https://www.gov.kz/memleket/entities/qyzmet/documents/details/150810?lang=ru accessed 04.05.2021

Albalushi, T., Ali, S. (2015). Evaluation of the quality of E-government services: Quality trend analysis. *2015 International Conference on Information and Communication Technology Research (ICTRC)*, 226-229

Amanbek, Y., Balgayev, I., Batyrkhanov, K., Tan, M. (2020). Adoption of e-Government in the Republic of Kazakhstan. *Journal of Open Innovation: Technology, Market, and Complexity*, 6(3):46. https://doi.org/10.3390/joitmc6030046

Andersen, K. V., Henriksen, H. Z. (2006). E-government maturity models: Extension of the Layne and Lee model. *Government Information Quarterly*, 23 (2)

Baxter, G., Sommerville, I. (2011). Socio-technical systems: From design methods to systems engineering. *Interacting with Computers*, 23 (1), 4-17

Callen, M. and Hasanain, A. (2011). The Punjab Model of Proactive Governance: Empowering Citizens Through Information Communication Technology. Available

http://www.alihasanain.com/uploads/3/7/8/7/37876581/punjab_model_evaluation_calle
n_and_hasanain.pdf

Center for Strategic Research and Analysis. (2020). Assessment of the effectiveness of
government agencies. Available https://evaluation.egov.kz/ru/kategorii/itogi-ocenki
accessed 27.02.2021

Davis F. D. (1989). Perceived Usefulness, Perceived Ease of Use, and User Acceptance
of InformationTechnology. *MIS Quarterly*, 13 (3), 319-340

DeLone, W.H., McLean, E. R. (2003). The DeLone and McLean Model of Information
Systems Success: A Ten-Year Update. *Journal of Management Information Systems*, 19
(4), 9-30

E-Governance Academy. (2016). E-Estonia: e-Governance in Practice.
https://ega.ee/wp-content/uploads/2016/06/e-Estonia-e-Governance-in-Practice.pdf

E-Governance Academy. (2020). Digital Maturity Assessment for three Arab States.
Available https://ega.ee/project/digital-maturity-assessment-three-arab-states/ accessed
6.03.2021

Erlenheim, R. (2019). Designing Proactive Public Services. Doctoral thesis. Tallinn,
Estonia: Tallinn University of Technology

European Commission. (2019). eGovernment factsheets anniversary report. Available
https://ec.europa.eu/isa2/sites/default/files/docs/news/10egov_anniv_report.pdf

Gartner. (2017). 5 Levels of Digital Government Maturity. Available
https://www.gartner.com/smarterwithgartner/5-levels-of-digital-government-maturity/
accessed 27.02.2021

Ganesan, V., Lam, Y., Lin, D.-Y. (2019). How Singapore is Harnessing Design to
Transform Government Services [Blog Post]. Available
https://www.mckinsey.com/industries/public-sector/our-insights/how-singapore-is-
harnessing-design-to-transform-government-services accessed 19.03.2021

Government Chief Information Officer Office. (2020). Next Generation Digital
Government Architecture. Available https://46lsnmttuzs3omis7vq45py1-

wpengine.netdna-ssl.com/wp-content/uploads/2020/03/Next-Generation-Digital-Government-Architecture-1.0.pdf

Government for Citizens State Corporation. (2021). General information. Available https://gov4c.kz/ru/about/obshchaya-informatsiya/ accessed 10.03.2021

Holliday, B. (2019). Designing Services With Life Events [Blog Post]. Available https://blog.wearefuturegov.com/designing-services-with-life-events-6d3bc3b35694 accessed 19.03.2021

Kassen, M. (2016). *E-government in Kazakhstan: A Case Study of Multidimensional Phenomena*. Routledge, London. DOI: 10.4324/9781315400587

Kazinform. (2020a). High-quality digitalization can be achieved by revising the business processes functions - Bagdat Musin. Available https://www.inform.kz/ru/kachestvennoy-cifrovizacii-mozhno-dobit-sya-pri-peresmotre-funkciy-biznes-processov-bagdat-musin_a3722544 accessed 9.04.2021

Kazinform (2020b). Center for Engineering and Digital Transformation will be created in Kazakhstan. Available https://www.inform.kz/ru/centr-inzhiniringa-i-cifrovoy-transformacii-budet-sozdan-v-kazahstane_a3712315 accessed 9.04.2021

Kroonmae, K. (2017). Implementing proactive services in Estonian local governments, Master's Thesis, Tallinn University of Technology

Lau, A. (2019). Innovating Singapore: One lab's journey to change government for good [Blog Post]. Available https://apolitical.co/en/solution_article/innovating-singapore-one-labs-journey-to-change-government-for-good accessed 19.03.2021

Layne, K. and Lee, J. (2001). Developing fully functional e-government: A four stage model. *Government Information Quarterly*, 18 (2), 122-136

Linders, D., Liao, C. Z.-P., Wang, C.-M. (2016). Proactive e-Governance: Flipping the service delivery model frompull to push in Taiwan. *Government Information Quarterly*, [e-Journal].

Lindgren, I., Jansson, G. (2013). Electronic services in the public sector: A conceptual framework. *Government Information Quarterly*, 30 (2). https://doi.org/10.1016/j.giq.2012.10.005

Michael C., Hasanain A. (2011). The Punjab Model Of Proactive Governance: Empowering Citizens Through Information Communication Technology - Findings From An Early Review Of Evidence. http://www.punjabmodel.gov.pk/

Observatory of Public Sector Innovation. (2019). Having a child life-event service. Available https://oecd-opsi.org/innovations/child-life-event/ accessed 10.03.2021

Official information resource of the Prime Minister of the Republic of Kazakhstan (2020). Automated 82% of public services and provided more than 54 million services in electronic format - the results of digital development for 2019. Available ://primeminister.kz/ru/news/reviews/avtomatizirovany-82-gosuslug-i-okazano-bolee-54-mln-uslug-v-elektronnom-formate-itogi-cifrovogo-razvitiya-za-2019-god-1155836 accessed 10.03.2021

Open Dialog. (2021). MLSPP digitized 91% of services in the social and Labor sphere. Available https://dialog.egov.kz/blogs/posts/2148 accessed 10.03.2021

OECD Eurasia. (2016). Enhancing Public Service Delivery for the Private Sector in Kazakhstan. Astana

Parry, G., Newnes, L., Huang, X. (2011). Good, Products and Services in (Eds.) Macintyre et al. Service Design and Delivery: Service Science: Research and Innovation in the Service Economy, Springer Science + Business Media

Peña, S., Córdova, G. (2001). Public participation and water supply: The case of two communities on the USA-Mexico border. 26, 390–399

PricewaterhouseCoopers. (2014). Summary: Integrated portfolio Management of Public Services

Sá, F., Rocha, Pérez Cota, M. (2016). From the quality of traditional services to the quality of local e-Government online services: A literature review. *Government Information Quarterly*, 33(1), 149-160

Sirendi, R., Taveter, K. (2016). Bringing Service Design Thinking into the Public Sector to Create Proactive and User-Friendly Public Services. *HCI in Business, Government, and Organizations: Information Systems. HCIBGO 2016. Lecture Notes in Computer Science*, 9752, 221-230. https://doi.org/10.1007/978-3-319-39399-5_21

Steen, M., Manschot, M., De Koning, N. (2011). Benefits of co-design in service design projects. *International Journal of Design*, 5(2), 53-60

Stickdorn, M., Schneider, J. (2010). *This is Service Design Thinking*. Amsterdam: BIS Publishers

Shimomura, Y., Hara, T., Arai, T. (2008). A service evaluation method using mathematical methodologies. Ann. CIRP 57, 437–440. https://doi.org/10.1016/j.cirp.2008.03.012

Shimomura, Y., Nemoto, Y., Akasaka, F., Kimita, K. (2014). A Method for Negotiating Various Customer Requirements for Public Service Design. Axioms. 3(1), 1-9. https://doi.org/10.3390/axioms3010001

South-South Galaxy. (2021). Proactive E-Services. Available https://my.southsouth-galaxy.org/en/solutions/detail/proactive-e-services accessed 10.03.2021

Todorovski, L., Kunstelj, M., Vintar, M. (2007). Reference Models for E-Services Integration Based on Life-Events. Electronic *Government: 6th International Conference*, 92–103

Todorovski, L., Leben, A., Kunstelj, M., Cukjati, D., Vintar, M. (2006). Methodology for building models of life events for active portals. *Communication Proceedings of the Fifth International EGOV Conference 2006,* 61–68

Trischler, J., Dietrich T., Rundle-Thiele, S. (2019). Co-design: from expert- to user-driven ideas in public service design. *Public Management Review*, 21 (11), 1595-1619, DOI: 10.1080/14719037.2019.1619810

Trochidis, I., Tambouris, E., Tarabanis, K. (2007). An Ontology for Modeling Life-Events. *IEEE International Conference on Service Computing Proceedings*, 719–720

The E-Government of Kazakhstan (2021). Available www.egov.kz accessed 15.03.2021

The Public Services Committee of the Ministry of Digital Development, Innovations and Aerospace Industry of the Republic of Kazakhstan (2021). Available https://www.gov.kz/memleket/entities/kgu/about?lang=ru accessed 15.03.2021

The Ministry of Digital Development, Innovations and Aerospace Industry of the Republic of Kazakhstan. (2021a). Available https://www.gov.kz/memleket/entities/mdai?lang=en accessed 15.03.2021

The Ministry of Digital Development, Innovations and Aerospace Industry of the Republic of Kazakhstan (2021b). The draft amendments to the legislation aimed at strengthening the protection of personal data have been re-published for public discussion. Available https://www.gov.kz/memleket/entities/mdai/press/news/details/186298?lang=ru accessed 30.04.2021

The Ministry of Labor and Social Protection of Population of the Republic of Kazakhstan (2021). Available https://www.gov.kz/memleket/entities/enbek/about/structure/departments/activity/549/1?lang=ru accessed 30.04.2021

The Ministry of Justice of the Republic of Kazakhstan (2013). The Law of the Republic of Kazakhstan No. 88-V. On Public Services. Available http://adilet.zan.kz/rus/docs/Z1300000088

The Ministry of Justice of the Republic of Kazakhstan (2015). Order of the acting Minister for Investment and Development of the Republic of Kazakhstan dated February 18, 2015 No. 133. On Rules for the optimization and automation of public services. Available http://adilet.zan.kz/rus/docs/V1500010501#z7

The Ministry of Justice of the Republic of Kazakhstan (2020). Order of the Minister of Digital Development, Innovation and Aerospace Industry of the Republic of Kazakhstan dated April 24, 2020 No. 155 On approval of the Rules for the provision of proactive services. Available http://adilet.zan.kz/rus/docs/V2000020495

The National Information Technologies (2021). Available https://www.nitec.kz/ accessed 30.04.2021

Vintar, M., Leben, A. (2002). The Concepts of an Active Life-Event Public Portal. *Proceedings of Electronic Government, First International Conference, EGOV 2002*, 383–390

Wimmer, M. (2002). A European perspective towards online one-stop government: The eGOV project. *Electronic Commerce Research and Applications*, 1(1), 92–103

Wimmer, M., Tambouris, E. (2002). Online One-Stop Government: A working framework and requirements. *Proceedings of the IFIP World Computer Congress*. http://dx.doi.org/10.1007/978-0-387-35604-4_9

Winby, S. and Mohrman, S. (2018). Digital Sociotechnical System Design. *The Journal of Applied Behavioral Science*, 54 (4), 399-423

Yu, E. and Sangiorgi, D. (2014). Service Design as an approach to New Service Development: reflections and future studies. Available https://www.researchgate.net/publication/263088902_Service_Design_as_an_approach _to_New_Service_Development_reflections_and_future_studies

Zerde. (2021a). JSC National Info communication holding Zerde. Available https://zerde.gov.kz/ accessed 15.03.2021

Zerde. (2021b). Center for Digital Transformation. Available https://zerde.gov.kz/activity/tsentr-tsifrovoy-transformatsii.php accessed 12.04.2021

Zor Rukh Private Foundation. (2019). Results of public monitoring of the quality of public service provision

Zhexembekova, V. (2018). The government program Digital Kazakhstan: Innovations in the electoral legislation. *Kazakhstan Spectrum Scientific journal*. 2018/3 (85)

Appendix 1 – Non-exclusive licence for reproduction and publication of a graduation thesis[1]

I Elmira Kumarbekova

1. Grant Tallinn University of Technology free licence (non-exclusive licence) for my thesis "Perspectives of Implementing Proactive Public Services in Kazakhstan", supervised by Innar Liiv

    1.1. to be reproduced for the purposes of preservation and electronic publication of the graduation thesis, incl. to be entered in the digital collection of the library of Tallinn University of Technology until expiry of the term of copyright;

    1.2. to be published via the web of Tallinn University of Technology, incl. to be entered in the digital collection of the library of Tallinn University of Technology until expiry of the term of copyright.

2. I am aware that the author also retains the rights specified in clause 1 of the non-exclusive licence.

3. I confirm that granting the non-exclusive licence does not infringe other persons' intellectual property rights, the rights arising from the Personal Data Protection Act or rights arising from other legislation.

10.05.2021

---

1 The non-exclusive licence is not valid during the validity of access restriction indicated in the student's application for restriction on access to the graduation thesis that has been signed by the school's dean, except in case of the university's right to reproduce the thesis for preservation purposes only. If a graduation thesis is based on the joint creative activity of two or more persons and the co-author(s) has/have not granted, by the set deadline, the student defending his/her graduation thesis consent to reproduce and publish the graduation thesis in compliance with clauses 1.1 and 1.2 of the non-exclusive licence, the non-exclusive license shall not be valid for the period.

Appendix 2 – List of sample questions to the interviewees

1. Questions to the representative of National Information Technologies:

1. How do you assess the level of integration between the information systems of state bodies? Does it allow the provision of public services in a proactive format?

2. Please tell more about the integration between information systems of state bodies.

3. How is the coordination of state bodies' architecture development is carried out?

4. Do the state bodies of Kazakhstan use the once-only principle from citizens? How is information about citizens updated in the information systems of state bodies?

5. Do you think that the current processes of public service provision meet the needs of citizens?

6. How is the process of reengineering of business processes of government bodies carried out? What methods are used to design public services?

7. Are the needs of citizens taken into account when optimizing business processes of public service provision?

8. Do you think that Kazakhstan citizens are ready for a proactive format of receiving services?

9. Does the legislation of the Republic of Kazakhstan allow for a full-fledged transition to the provision of public services in a proactive format?

10. In your opinion, what obstacles may arise during the implementation of a full-fledged transition to the provision of public services in a proactive format?

2. Questions to the representative of the Ministry of Labor and Social Protection of Population:

1. In your opinion, what requirements should state electronic services meet?

2. In your opinion, do the current processes of providing public services in the social and Labor sector correspond to the interests of citizens?

3. At what stage is the current work on the introduction of proactive services in the social and Labor sphere? (18 services in the social and Labor sector are provided proactively)

4. In your opinion, are the citizens of Kazakhstan are ready for a proactive format of receiving services?

5. How is the business process reengineering process carried out? What methods are used for the design of public services?

6. Does the legislation of the Republic of Kazakhstan allow for a full-fledged transition to the provision of public services in a proactive format?

7. How is the work with state bodies coordinated in the process of transformation of public service provision by the Ministry of Labor and Social Protection of the Population of the Republic of Kazakhstan?

8. How do you assess the level of integration between the information systems of state bodies? Does it allow the provision of public services in a proactive format?

9. In your opinion, what obstacles may arise in the implementation of a full-fledged transition to the provision of public services in the social and Labor sphere to a proactive format?

3. Questions to the representative of Government for citizens State Corporation

1. How the process of public service provision quality improvement is carried out?

2. How is the Information System for Monitoring the Provision of Public Services used in the process of public service provision quality improvement?

3. How do you assess the level of integration between information systems of state bodies? Does it allow the provision of public services in a proactive format?

4. In your opinion, do the current processes for the provision of public services meet the citizens needs?

5. Are the needs of citizens taken into account when optimizing the business processes of public service provision?

6. Do you think the citizens of Kazakhstan are ready for a proactive format of receiving services?

7. Does the legislation of the Republic of Kazakhstan allow an extensive transition to the provision of public services in a proactive format?

4. Questions to the representative of Reengineering Center:

1. In your opinion, what requirements should be met by public services developed on the basis of a Life Event approach (G2C)?

2. How work with government agencies is coordinated within the process of reengineering based on Life Events?

3. How the proposals for optimizing the business processes of government bodies are being carried out?

4. How the process of reengineering based on Life Events is carried out. What methods to design Life Events are used?

5. How do you assess the level of integration between the information systems of state bodies? Does it allow the provision of public services based on a Life Events approach (including in a proactive format)?

6. Do you think the current processes of public service provision meet the citizens' needs?

7. How citizens' needs are taken into account for reengineering based on Life Events?

8. In your opinion, what technical requirements should be taken into account during the transition to the provision of public services based on Life Events (including in a proactive format)?

9. In your opinion, what obstacles may arise during the implementation of the transition to the provision of public services based on Life Events (including in a proactive format)?

5. Questions to the representative of MLSPP Digitalization Department:

1. What are the future plans for the transformation of public service provision and the digitalization of social and labor sphere?

2. How the work with state bodies is coordinated within the transformation of public service provision by the MLSPP?

3. What is the current stage of the work on the Social Services Portal project and on the Digital Family Card project?

4. Are the services provided under these projects being provided proactively?

5. Databases of which government agencies are integrated for service provision within the Digital Family Card project?

6. How the business processes for the Digital Family Card project were developed?

7. How the interagency coordination for the work on the Digital Family Card project was carried out?

8. What obstacles were encountered during working on the Digital Family Card project?

9. Do you think the citizens of Kazakhstan are ready for a proactive format of receiving services?

10. Does the legislation of the Republic of Kazakhstan allow for a full-fledged transition to the provision of public services in a proactive format?

11. How do you assess the level of integration between information systems of state bodies? Does it allow the provision of public services in a proactive format?

12. What obstacles may arise during the implementation of a full-fledged transition to the provision of public services in the social and labor sphere to a proactive format?

6. Questions to the representative of State Social Insurance Fund:

1. In what format do citizens of Kazakhstan prefer to receive public services for the appointment of social benefits? Do they use the opportunity to receive services in a proactive format?

2. In your opinion, are the citizens of Kazakhstan ready to receive public services for the appointment of social benefits in a proactive format?

3. How did the introduction of proactive services for the appointment of social benefits affect the workload of the Fund's specialists?

4. In your opinion, do the current processes for providing public services for the appointment of social benefits meet the citizens' needs?

5. In your opinion, what obstacles may arise during the implementation of a full-fledged transition to the provision of public services for the appointment of social payments in a proactive format?

7. Questions to the representative of Agency for Civil Service Affairs:

1. How the process of improving the quality of public service provision is carried out?

2. How proposals for optimizing the business processes of government bodies are carried out?

3. How the results of public monitoring are used by government agencies? How the work on the identified problematic issues is carried out (for example, the request of unnecessary documents)?

4. Do you think the current processes for providing public services meet the citizens' needs?

5. Are the citizens needs' taken into account when optimizing business processes for public service provision?

6. In which format Kazakhstan citizens prefer to receive public services? Do they use the opportunity to receive services in a proactive format?

7. In your opinion, are the state bodies of Kazakhstan ready for the transition to proactive format of public service provision?

8. Does the legislation of the Republic of Kazakhstan allow for a full-fledged transition to the provision of public services in a proactive format?

9. In your opinion, what obstacles may arise in the implementation of a full-fledged transition to the proactive format of public service provision?

Appendix 3 – List of sample questions to public service receivers (citizens)

Survey for E-Governance Technologies and Services master's program thesis

Dear respondent,

I am a master's student of Tallinn University of Technology. This survey consists of 17 questions and is carried out exclusively to collect information within master's research framework. The purpose of the study is to analyze how the citizens of Kazakhstan assess the quality of the provision of public services. The survey is anonymous and will take about 5-8 minutes. Please send all questions and suggestions that arose during the survey to kumarbekova.elmira.e@gmail.com email address.

Thank you for your time!

1. Please specify your age
   - 16-24
   - 25-35
   - 36-45
   - 46-55
   - 56 and above

2. Please specify your gender
   - Male
   - Female

3. Please specify your place of residence
   - Capital
   - City of republican significance
   - Regional center
   - City of regional subordination
   - Rural area (village, etc.)

4. Please specify your level of education

- Secondary/secondary specialized
- Bachelor's degree
- Master's degree
- PhD or higher
- Other

5. Which methods to receive public services do you prefer?
- Public Service Center (PSC) visit
- Territorial state bodies visit (departments, offices, divisions)
- E-Government web portal (www.egov.kz)
- eGov Mobile app
- Telegram bot of the e-government portal (EgovKzBot2.0)
- Egov.kz services via SMS
- Other

6. How many times a month do you apply for public services?
- 1-2 times
- 3-5 times
- More than 5 times
- Other

7. How many times a year do you apply for public services?
- 1-2 times
- 3-5 times
- More than 5 times
- More than 10 times
- Other

8. For public services of which following public sectors do you usually apply? (Multiple options can be selected)
- Family
- Healthcare service
- Education
- Job placement and employment
- Social security provision
- Citizenship, migration and immigration
- Real estate
- Customs and taxes

- o Legal assistance
- o Transportation and communication
- o Tourism and sports
- o Military registration and security

9. How satisfied are you with the quality of public services?
   - o Completely satisfied
   - o Partially satisfied
   - o Not satisfied

10. How do you feel about the fact that government agencies use your personal data to provide public services?
    - o Positive
    - o More positive than negative
    - o Neutral
    - o More negative than positive
    - o Negative

11. Do you use the E-Government web portal (www.egov.kz) to receive public services?
    - o Yes
    - o No

12. If not, for what reasons are the reasons why you decided not to use the E-Government portal? (Multiple options can be selected)
    - o The portal is inconvenient to use
    - o It's difficult to find and get the service you need
    - o The portal works slow
    - o I do not have access to the Internet
    - o Other

13. Do you know about the existing security mechanisms when receiving public services via the Internet?
    - o Yes
    - o No

14. Please indicate what, in your opinion, could improve the quality of public services
    - o Raising awareness of the possibilities of E-Government
    - o Increasing the level of security/confidentiality of data transmission

- Availability of personal assistance when receiving electronic services
- Simplification of administrative procedures
- Simplification of the process E-Government portal usage

15. Have you heard of proactive public services? (Note: Proactive services are services that the state itself offers to citizens in various life situations. For example, a proactive childbirth service)
   - Yes
   - No

16. Have you ever received proactive public services?
   - Yes
   - No

17. Would you agree to receive a proactive public service if it is offered to you via SMS?
   - Yes
   - No