

**Czech University of Life Sciences Prague**

**Faculty of Economics and Management**

**Department of Information Technologies**



**Bachelor Thesis**

**Proposal of a new electronic public service in Uzbekistan**

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## BACHELOR THESIS ASSIGNMENT

abs. v. š. Abdulla Khaydarov

Informatics

Thesis title

**Proposal of a new electronic public service in Uzbekistan**

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### Objectives of thesis

The main objective of the thesis is to propose and design a new electronic public service in Uzbekistan.

The partial goals of the thesis are such as following:

- To make a comprehensive literature review of electronic public services provision with focus on Uzbekistan.
- To analyse the current state of the electronic public services in Uzbekistan and identify possible gaps.
- To design and evaluate a prototype of a new public e-service in Uzbekistan.

### Methodology

The methodology of the research work is based on the literature review in domains of e-government and online public services. In the practical part, a proposal of new service model using the conventional graphical representation Business Process Model and Notation 2.0. Further, SWOT and comparative analyses will be applied. The practical recommendation and conclusion will be formulated and presented further.

## **The proposed extent of the thesis**

30 – 40 pages

## **Keywords**

E-government, modelling, services, electronic services, car registration

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## **Recommended information sources**

Barney Warf. e-Government in Asia:Origins, Politics, Impacts, Geographies. Chandos Publishing, 2016. ISBN: 9780081008997.

Brandt Richard L. One Click Jeff Bezos and the Rise of Amazon.com. 2nd reprint edition. London: Penguin Portfolio, 2012. ISBN: 978-1591845850

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United Nations. UN E-Government Survey 2016. [online]. Available from:

<https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2016>

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## **Declaration**

I declare that I have worked on my bachelor thesis titled "Proposal of a new electronic service for businesses in Uzbekistan" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the bachelor thesis, I declare that the thesis does not break copyrights of any their person.

In Prague on date of submission

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# Proposal of a new electronic public service in Uzbekistan

## Abstract

This thesis is about the quality of electronic public services in Central Asian countries, with a special focus on Uzbekistan. It was conducted a comprehensive analysis of the current state of e-services in Uzbekistan. After making a contrast comparison with the public portals of neighboring countries, a few shortcomings and gaps of the Uzbek public portal were found.

To fill one of those gaps, a new electronic public service was proposed. CATWOE analysis was employed in order to identify the needs of the public. Use case diagram as well as Business Process Model and Notation 2.0 were drawn. The prototype of the proposed e-service was presented.

After that, FURPS+ and SWOT analysis were done in order to evaluate the effectiveness of the proposed service and to identify opportunities that can be taken in the future to make the platform of public services in Uzbekistan even better.

**Keywords:** E-government, modelling, services, electronic services, car registration

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## **Introduction**

Since the end of the last century the Central Asian countries, one of which is Uzbekistan, have been trying to seek for new tools of technological advancements for a better management of government processes in order to be able to better compete with regional as well as global markets, to strengthen their own economies, to ensure the economic growth, to reduce poverty, and to improve the quality of their peoples in general. Despite the fact that the internationally accepted strategies and tools are widely available to each of the central Asian governments, and the knowledge regarding new technologies and services is shared quite openly, the way the government of each country chooses to implement those tools and knowledge differs remarkably from region to region.

According to the Asian Development Bank (ADB, 1995), the definition of government is “the manner in which power is exercised in the management of a country’s economic and social resources for development”. Taking into consideration the cultural and economic differences of various countries, the ADB indicated four major factors of a smart and good governance which is necessary to be employed by all the countries. The first factor is accountability, which means that each official has to be answerable to a corresponding authority, that the work must be done in compliance with the regulations and standards, and that it has to be reported in a fair and accurate manner. The second factor is participation, which means that the public worker needs to participate in decision making processes, that citizens need to be regularly reminded, through informative campaigns and similar events, about their rights to access the basic facilities that help them make a living. The third factor is predictability, which means that the laws and policies have to be applied fairly and consistently, without any biased cases. And the last factor is transparency, which means that all the necessary and relevant information have to be made available for an affordably low cost and presented in a particularly understandable way so that the wide public is capable of processing that information about policies, regulations and laws of the country.

On the other hand, John Graham (2004) in his article called “Towards Sound Government to Government Relationships With First Nations” gives an alternative approach to governance, indicating five factors of a sound government. The first of those five factors is fairness, which emphasizes the importance of respecting the legal rights and jurisdictions in treating different nations equally. The second one is direction – having long-term goals, vision, in order to have rules and principles which is to be followed consistently in building relationship with people. The next factor is legitimacy and voice,

which indicates the importance of protecting the rights of different nations and cultures of the country, especially the minorities. The fourth factor is accountability, which explains the relationship issues of officials between one another as well as with the public and how those relationships have to be built, how its hierarchy should be like, and in which way the officials have to be held accountable in front of the government and people. The last factor that John Graham mentions in his paper is performance, which evaluates cost effectiveness, how the disputes are resolved, and how sophisticated is the structure and methods of management.

This thesis was written to analyze e-government processes and evaluate the quality of e-government portals dealing with the general public in Central Asia, with a special focus on Uzbekistan. The main goal of this bachelor thesis is to propose a new public service for people of Uzbekistan. First, objectives and methodologies, which will be employed in this thesis, will be explained. Then, the theoretical part of the paper will be presented, which will help better understand the current situation and the accepted standards of e-government in Central Asian countries. When the current state of the e-government quality is defined, a new public service in Uzbekistan, which is assumed to be offered in the e-government portal of the country, will be proposed. The results, quality, and the effectiveness of the new public service will be analyzed and evaluated, and the final summary will be elaborated in the concluding part of this thesis.

# **1 Objectives and Methodology**

## **1.1 Objectives**

The major goal of this Bachelor thesis is to propose and design a new electronic public service to be employed in the e-government portal of Uzbekistan that will help the people of the country to make a car registration through the government portal and cooperate with the government more effectively.

As partial goal, the thesis will make an elaborate review of the academic literature that is related to the topic of e-government in Central Asia and Uzbekistan, in particular.

The thesis explains various phenomenon to better understand the current state of the e-government services of the country, comparing different ranking statistics, and data related to electronic services of the government. Then the paper examines the current state of services of Uzbek government portal and finds the flaws in the structure and in the range of the services.

The following part of the thesis will be the proposal, design, and evaluation of a new public service in Uzbekistan.

## **1.2 Methodology**

The methodology of this thesis is based on a thorough research of the current situation of the e-government services in the Central Asian region with a special focus on Uzbekistan. Relevant information will be provided to evaluate the quality of the current circumstances of the e-government services, using different statistical data and research works done earlier in this field.

In the practical part, Business Process Model and Notation 2.0, SWOT analysis, FURPS+ analysis, use case diagram, and prototype screenshots will be proposed to present the new public electronic service to the e-government of Uzbekistan.

As a result, a new e-government public service will be proposed.

## **2 Literature Review**

This section of the thesis – Literature Review – deals with the different resources available to conduct the research in the field of e-government services and businesses. As was found out during the research process, the resources on this topic is quite abundant. Therefore, below is provided a rather wide range of information, including statistical and non-statistical data, definitions, and various scientific conclusions relevant to the topic of this paper.

### **2.1 The role of e-government portals in a modern country**

E-government is a field of interdisciplinary research that is emerging and developing rather rapidly, providing useful, practical, and effective recommendations to citizens in the form of electronic government services (Assar, 2011).

According to the World Bank, e-government is “the use of government agencies of information technologies like wide area networks, the internet and mobile computing that have the ability to transform relations with citizens, businesses, and other arms of government” (World Bank, 2011). Whereas, according to the United Nations (UN) e-government is “the use of ICT and its application by the government for the provision of information and public services to the people” (United Nations, 2010).

The main point that these two interpretations of e-government share is that IT is a quite significant tool for promoting the collaboration between a government and other stakeholders, which might be the citizens of the country, other governments, or business entities (Moon, 2002).

#### **2.1.1 Types of e-government**

Fang (2002) claims that the understanding and implementation of e-government can range rather widely: government-to-citizen (G2C), citizen-to-government (C2G), government-to-business (G2B), business-to-government (B2G), government-to-government (G2G), government-to-nonprofit (G2N), nonprofit-to-government (N2G), and government-to-employee (G2E).

This paper mainly focuses on government-to-business (G2B) and business-to-government (B2G), although some aspects of other types of e-government might be elaborated to some extent too.

### **2.1.2 Old and new thinking of e-government**

In addition to all the above-mentioned interpretations and usages of e-government technologies, Harorimana (2011) argues that e-government can be understood in old thinking and new thinking. The old thinking refers to e-government as a tool that can potentially transform the relationship between citizens and businesses and governments with the use of such technologies as wide area networks (WAN), the internet, mobile computing, whereas the new thinking of e-government would be explained as a tool of governments for delivering services to citizens.

Another difference between the old and new thinking of e-government, according to Harorimana (2011), is that the old one is concerned about multiple channels of delivery of information and services to multiple stakeholders. On the other hand, the new thinking emphasises only one channel of service delivery (the internet) and only one stakeholder (citizens).

In this thesis, we will be dealing with the new thinking, in other words, with e-government e-portals and how they serve to be a tool for delivering services to businesses. These portals transform the relationship between a government and its citizens (in our case, businesses) to be purely in electronic form, eliminating the need for citizens to physically visit the government entity (Moon, 2002).

### **2.1.3 Effects of website design and implementation**

The most important factors of the success of an e-government portal are its design, implementation, and the services that the citizens and businesses can take advantage of (Abduoullah Fath-Allah, 2014). The quality of the website significantly affects the behaviour of the users navigating in the portal and, consequently, significantly affects the value they get from these portals (Kumar et al., 2007), increasing the level of satisfaction of users, who use the services provided by the government (Alshehri et al., 2012). In addition to all of this, the website quality plays a great role in determining and making sure that the problems of a government are progressively resolved and the legacy of the government preserved (Assar, 2011).

The results of many researches have shown that the use of e-government portals save remarkable amount of time and costs of government service agencies (United Nations, 2012a; NIA, 2013).

## **2.2 E-government in Central Asia**

When researching the quality level of e-government in a certain country, many scientists research the interaction between government and the citizens in order to determine to what extent the content, functions, and services of information technologies change the accountability and transparency of a government in front of its citizens, businesses, and other government institutions. However, in the case of the Central Asian countries, most of which have been exercising authoritarian regimes, researchers will have to look at this institution (e-government portals as services to citizens) from a different angle. The job of the researches become even more interesting because of the fact that rather small share of the population of the region have access to the Internet.

### **2.2.1 The reason why Central Asia is a special case**

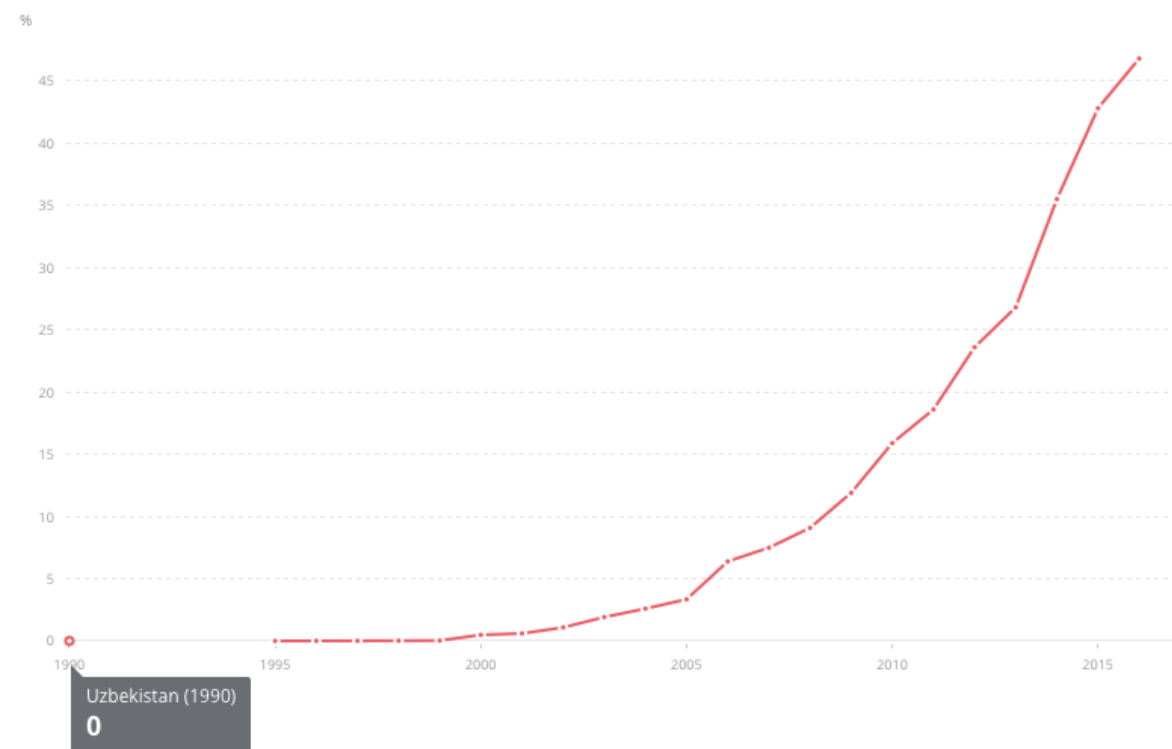
The Central Asian governments and their use of e-government portals need to be addressed with a special attention, for another interesting reason that the governments of these nations are very much likely, based on history and empirical experience, to manipulate information that they are presenting to the citizens. They shape the communication in the kind of way not to contradict to any of the policies of the country. Therefore, before any information is presented to folks, especially through government websites, government officials will put that information through several censorship phases to eliminate and filter out any information that would potentially criticize or go against the authoritarian regime of a country (Erica Johnson et al., 2010).

For the above-mentioned reasons, the total transparency of government activities, the guaranteed openness and full access to the information or services may not be achieved in the case of Central Asian countries.

### 2.2.2 Access to the Internet

E-government portals are divided into national and regional (or city) levels. Nonetheless, these portals may serve as a tool to facilitate the easy communication and the use of government services, or they may also serve as a tool to create and foster authoritarian control over media of the nation (Erica Johnson et al., 2010).

The figure below shows the share of population of Uzbekistan who have access to and take advantage of the internet.



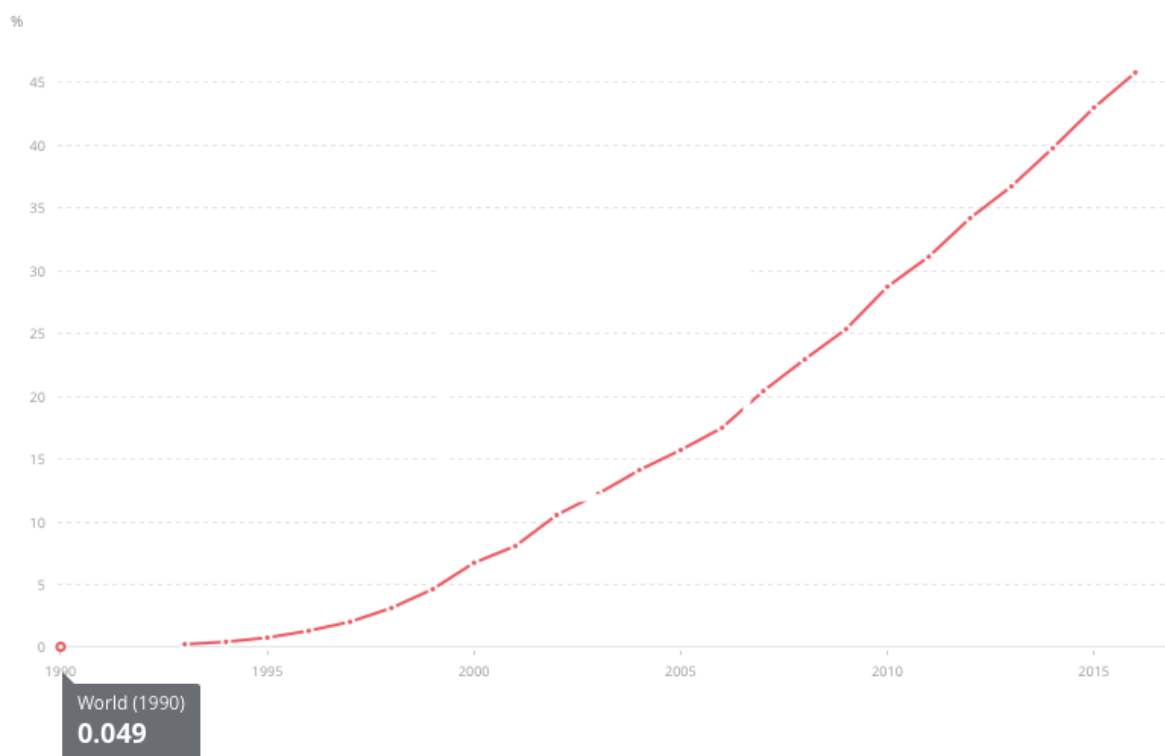
**Figure 1. Internet use in Uzbekistan from 1990 to 2016 (share of population in percentage)**  
(source: The World Bank, 2018)

Kyrgyzstan was a leader in the region in the share of population who use the internet with nearly 14 percentage points in 2006 and almost 19 percentage points in 2008 (Erica Johnson et al., 2010).

In each of the countries of the Central Asian countries, you could observe the positive trend in the increasing number of citizens using the internet year by year. For example, Uzbekistan had more than double the number of Uzbeks using the internet in 2008 than in 2006.



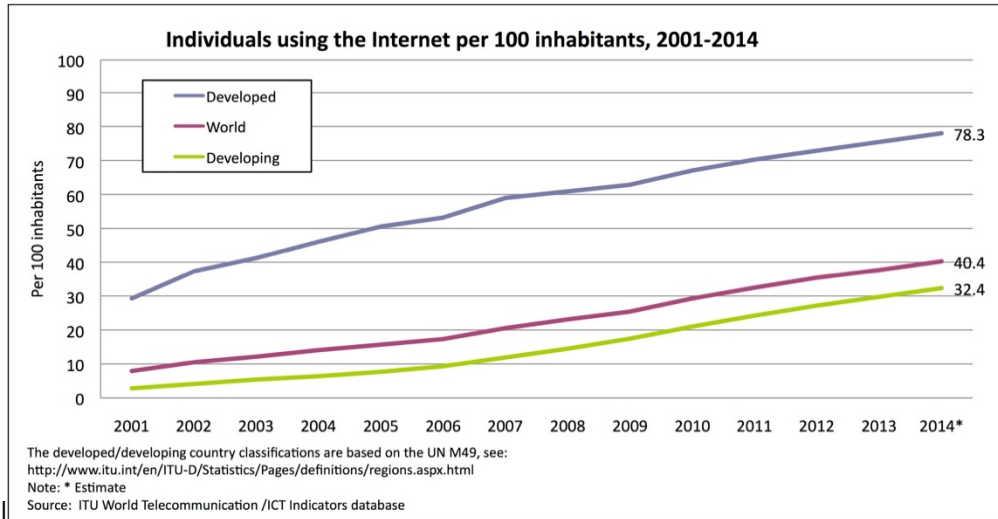
On the other hand, these numbers are not impressive compared to global internet usage trends. Kazakhstan, for example, has the second largest number of people who used the internet in the Central Asian region with just over twelve percent. Whereas this share is consistent with the world trend of internet users (see the chart below), it is still rather a low share in comparison with some developed western nations.



**Figure 2. Global Internet users between 1990-2016.**  
(source: The World Bank, 2018)

The figure 2 describes the trend of increasing share of world population who are regularly online. In 1996, according to Nielsen, ITU, just below one percent of the world population was using the Internet. In 2006 this number rose to around 11 percent, and in 2008 – to just below 16 percentage points.

Although this trend is consistent with that of Central Asian countries, the developed countries have far more users of the Internet than Kyrgyzstan, Kazakhstan or Uzbekistan.



**Figure 3. Internet in developed and developing countries from 2001 to 2014.**  
 (Source: ITU World Telecommunications).

The figure 3 illustrates in the graph that the share of population in developed nations who use the internet is double the share of that of developing nations. For example, in 2014 only 32 citizens out of 100 in developing countries have access to the Internet, whereas the more than 78 people out of 100 take advantage of the virtues of the Internet in the developing countries.

## 2.3 E-government benchmarking

One of the main criteria of studying e-Government is to evaluate the maturity and evolutionary stage of government websites or portals (Layne and Lee, 2001; United Nations and American Society for Public Administration, 2002). These stages of e-government portals of the countries show the progress and the state of the websites: from the early state when those portals provide just information and serves as just a channel to communicate information from the government entities to the citizens; to the mature state when the e-government portals allow citizens to actively participate in political life of the country with the use of, for example, online voting (Johnson and Kolko, 2010).

### 2.3.1 United Nations – E-Government Development Index (EGDI)

The United Nations employs the approach called “e-government development index (EGDI) to put countries of the world in one list and rank them according to the scores that each country receives from the UN ranking which assesses the readiness of the government for penetration of information technologies (IT) as well as the quality and type of services presented in those e-government portals. The Central Asian countries proved to be below the world average in those rankings.

The Central Asian countries lagged far behind the developed nations, some 3-4 years, in penetration of interactive and transactional services, which are the most important stage on the way to becoming a portal that ensures full political participation for the citizens of the country.

**Table 1. United Nations E-Government Development Index (EGDI) for Central Asia.**

Country	2014 Index	2016 Index	2014 Ranking	2016 Ranking	2018 Ranking
Kazakhstan	0.7283	0.7250	28	33	39
Kyrgyzstan	0.4657	0.4969	101	97	91
Uzbekistan	0.4685	0.5434	100	80	81
Turkmenistan	0.3511	0.3337	128	140	147
Tajikistan	0.3395	0.3366	129	139	131
Central Asia Region	0.4706	0.4871			
Global Average	0.4712	0.4922			

(source: UN E-Government Survey 2018).

The table above shows the rankings of Central Asian nations, in accordance to their UN EGD I in 2014 and 2016. As you can see, Kazakhstan had the highest ranking and index among all the Central Asian countries, with the index of 0.7250 in 2016 and ranked 33 in the world. The index of Kazakhstan was almost twice more than the global average, meaning the e-government of Kazakhstan was quite well developed and it was in the latest stages of e-government life-stages, with services of political integration such as online polls and other government services.

Kyrgyzstan and Uzbekistan were both slightly more than the global average, with the indices of 0.4969 and 0.5434, respectively. However, the indices of Turkmenistan and Tajikistan were well below the global average with 0.3337 and 0.3366, respectively. These two countries were the only countries in Central Asia the indices and rankings of which went down, rather than going up like in the case of any other Central Asian country.

Regarding Uzbekistan, from 2014 to 2016 this country made the biggest progress among these countries mentioned in the table, increasing its index by almost 9 points and going 20 stages up in the ranking, whereas other countries made much slower progress or made no progress at all. For example, Kyrgyzstan improved its index by only 3 points from 2014 to 2016, going up only 4 steps in the ranking – from 101 to 97. This shows that Uzbekistan was the fastest in improving its e-government readiness in the country, offering more and more quality services in its e-government portal my.gov.uz year by year.

### 2.3.2 World Economic Forum (WEF) – Network Readiness Index (NRI)

The data in the table 2 was collected from the World Economic Forum, network readiness index of countries in 2016. The table proves that Kazakhstan was indeed the region leader in the ranking of central asian countries that assesses its readiness for e-government portals and availability of government services in its websites. Kazakhstan was ranked 39 in 2016, scoring 4.6, while Kyrgyzstan was ranked 95, scoring 3.7.

**Table 2. Networks Readiness Index scores and ranks of Central Asian countries in 2016.**

Country	Score	Rank
Kazakhstan	4.6	39
Kyrgyzstan	3.7	95
Tajikistan	3.3	144

(source: World Economic Forum, Network readiness index 2016 report)

NOTE: Uzbekistan was not included in this table because in this report of 2016 done by World Economic Forum Uzbekistan was not included into statistics.

The WEF assessment of e-government of countries is quite consistent with the UN method of assessment (which we discussed in the previous section). For example, in NRI too Tajikistan was ranked the lowest in the region, 144 in the world, scoring 3.3.

## **2.4 The role of business in government**

Studies show that there is a direct correlation between the number of small business in the country and the number of cars. In other words, the more businesses are developed the more cars people are able and do purchase cars. When people purchase a car, the first thing they have to do to is to register this car in the government portal.

Furthermore, to solve the problems of a society, business institutions have played a significantly important role for a long time. Nonetheless, this phenomenon drew the global international attention by the developing and developed countries relatively not long ago (Covey and Brown, 2001).

The reason why this change in the mindset and in the value of businesses in government were globalization, information technology revolution and the division of world politics (Acutt et al., 2001). The way business looks in our modern world constantly changes and mutates into different forms, the understanding of business transforms from one to another as time passes and new innovations and new types of businesses emerge in the market or in the society. That being said, all of the modern businesses share more or less the same concept and underlying trends of development (Idemudia, 2010).

This change in the phenomenon of business and government relationship made people and governments think that business is not a hurdle for development, rather it is one of the important factors of success (Kuye et al., 2013). The new understanding of government-business collaboration as a way to improve the lives of people and the economic well-being of the country has put a special emphasis on collaboration and partnership (Hamann and Acutt, 2003). To achieve a sustainable development, both government and businesses have to make appropriate contributions into the common good (European Commission, 2001).

As for other spheres of the economy, they play a significant role in the development and growth of the economy as well.

For instance, in a paper published by Numonjon Malikov in 2016 he mentions that agriculture “has long been considered one of the priority areas of the economy of Uzbekistan”. 30% of employment in Uzbekistan are within the sector of agriculture. As much as 18 percent of the GDP comes from this sector. However, income per capita is low relatively to neighboring countries. For example, income per capita in Kazakhstan is \$5316, in Russia - \$25,635. In Uzbekistan - \$2227 (Malikov, 2016). This is another indicator that the economy of the country relies heavily on agricultural sector.

Cococar (2015) in her article „Financial System Development and Economic Growth in Transition Economies“ states that after collapse of the Soviet Union, the former-soviet countries have been transitioning from communist structure of the economy by developing financial institutions. Although this proved to be a difficult issue for the country, Cococar believes that there has been a good development in financial sector of the economies of former Soviet Union countries, including Uzbekistan.

#### **2.4.1 Labour force, loans, taxes, production, technology**

As the demand for labour in business activities of the country is increasing, we can observe structural reforms taking place in the most essential spheres of the economy.

One of those reforms is that more types of ownerships with different liabilities in each type were implemented, which increases the productivity of labour force, creates more employment opportunities for the peoples of the country, and improves the efficiency of work processes (Tursunov, 2015).

These reforms were achieved through several factors. For example, setting reasonable tax rates for small businesses so they can develop faster and create more job places. The government also provided opportunities for taking so-called “soft loans” to insure the expansion of production in the country.

The loans were one of the main contributors to the emergence of advanced technologies in the agricultural business sector (Saydaliyev, 2016). Nonetheless, there are some serious issues in the funding sources, because those sources come exclusively from local and employment assistance funds. This shows that the funding opportunities for the small businesses are rather limited. To solve this issue, one of the main objectives in the new

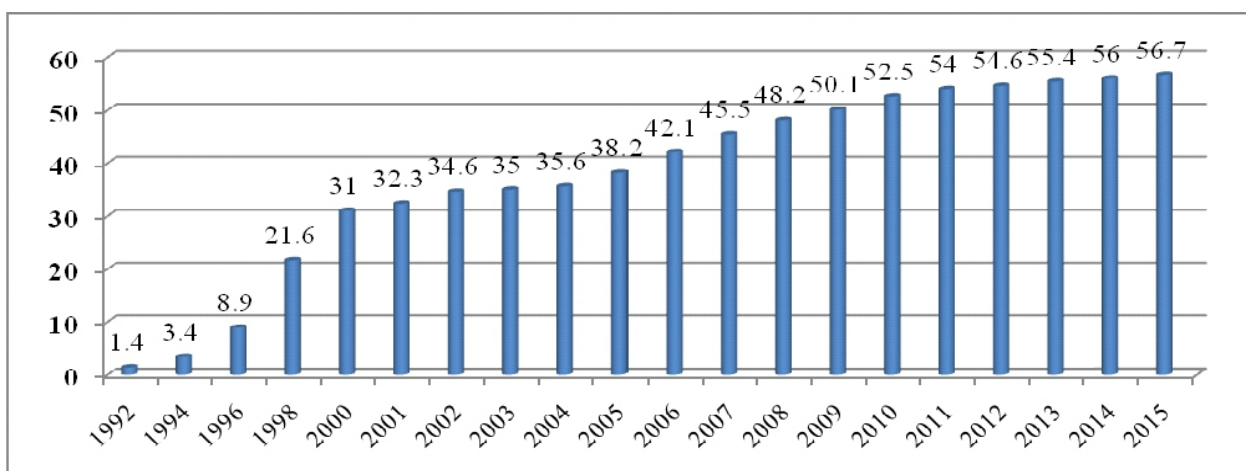
development plan of the new government elected in 2017 includes contributing to the flow of capital to the businesses through foreign investments. This, as the current government states, will be one the most significant contributors for the sustainable growth of small businesses in the country (lex.uz, 2016).

#### 2.4.2 Small business and entrepreneurship in Uzbekistan

According to Ibragimov (2016), to assess the role of small businesses and private entrepreneurship (the more businesses, the more cars) in Uzbekistan two factors have to be taken into close account.

The first of these factors is the share of gross domestic product that each of the region of Uzbekistan has. The second one is the role of local employment rates that affect the small businesses and private entrepreneurships.

This shows how important are small businesses and entrepreneurship in the gross domestic product (GDP) of the country. In other words, the higher is the development rate in small businesses and entrepreneurship, the more is the benefit to the GDP of the government. This can be proved by statistical data collected by the State Statistics of the Republic of Uzbekistan for the period of 1992-2015 (see Figure 4).



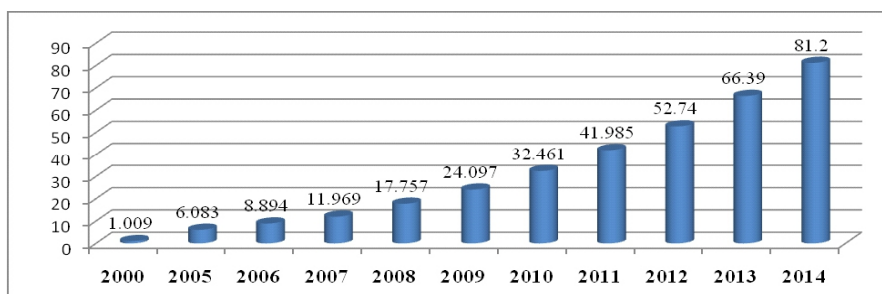
**Figure 4** The share of small business and private entrepreneurship in the Uzbekistan GDP (in percentages).

(Source: State Statistics of the Republic of Uzbekistan).

We can conclude from the data above that the growth of small businesses in the economy of the Republic of Uzbekistan could be divided into two parts. The first part is the period after the independence year (1991) until the end of the century (1999). During this period, the share increased quite rapidly. From 1992 to 1999 the share of small businesses and private entrepreneurship increased from 1.4% to more than 27%, an increase of more than 20 times, which is a rather remarkable change.

The second part or period of this development process is from 2000 to the present day. As you can see from the graph, in 2000 the share of small businesses in GDP of Uzbekistan was 31 per cent. In 2005 it reached a little over 38 percentage points, while in 2015 this share almost 57 percent, which is very remarkable, because this is more than half of the GDP of the country.

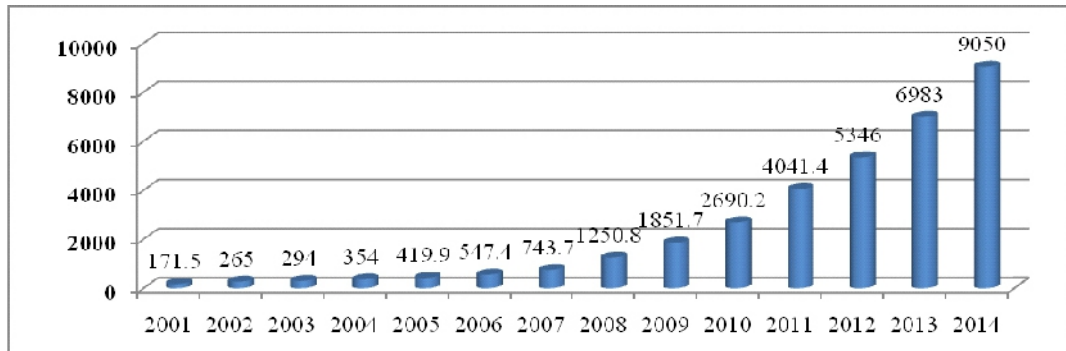
These figures are still growing. This shows us that there is a quite positive trend for small businesses and private entrepreneurship.



**Figure 5. Created volume in sales by small business and entrepreneurship (in current year, billion sum)**  
(Source: State Statistics of the Republic of Uzbekistan)

Taking into account that GDP is the main indicator of the economic and social well-being of the society and the nation as a whole, and the biggest chunk of GDP stems from small businesses, we can conclude that private entrepreneurship and small businesses are arguably the most important driver of the well-being of the society and the nation as a whole.





**Figure 6. The amount invested (in the form of subsidies, tax reductions, and loans) for the development of small businesses and private entrepreneurship (in billion sums).**  
(Source: State Statistics of the Republic of Uzbekistan)

Therefore, if we want to increase the quality of life of the people of Uzbekistan, we should contribute to the development of small businesses in the country, making the registration processes as easy as possible.

Whereas financial institutions of the country play a huge role in this, the technology sector might help a great deal for those purposes as well. That is why, this paper proposes a new electronic service to the government of Uzbekistan, in order to **make the car registration process as easy and quick as possible.**

### 3 Practical part

After making research into the current state of the electronic services of the government of the Republic of Uzbekistan, namely into the e-government website (my.gov.uz), some of flaws and discrepancies have been detected.

The errors and issues that were found on the portal of electronic services can be a matter of a design, user interface, or simply a logical flaw. The analysis of a current state of the electronic portal and the electronic services requires a close attention as well. In this part of the paper we will find weak parts of the current system, applications, and processes; we will make a CATWOE analysis; identify the stakeholders and their roles and responsibilities. Then we will detect the most remarkable defect of the portal and services that require a special attention. After that we are going to propose a solution to that problem.

In this proposal of the solution it is going to be explained why this solution is promising and can solve real issues that the government of the Republic of Uzbekistan is facing at the moment.

## **3.1 Current state analysis in Uzbekistan**

### **3.1.1 Overview**

Uzbekistan is located in Central Asia, with a population of over 30 million people. The majority of the population are ethnic Uzbeks, although some other nations like Russians, Kazakhs, Tajiks, and Koreans reside within the territory of the country. The capital of Uzbekistan is the city of Tashkent. Uzbekistan consists of 12 administrative regions (nationalgeographic.com, 2016).

Since Uzbekistan is located in the middle of Central Asian countries, it is considered as industrial, business, and cultural hub of the aforementioned region.

Uzbekistan is well-known for its export of cotton, which is the biggest export of the country and which is one of the main sources of country's income.

The country is also renowned for its car manufacturing industry. General Motors company has several factories in Uzbekistan, producing thousands of cars every year. The manufactured cars are then realized within the country (some 70% of produced cars) or abroad (mainly, Russia and Kazakhstan).

The country is run by the President, members of the Parliament, and Ministers. Currently the President of Uzbekistan is Shavkat Mirziyoyev, elected at the recent elections in November 2016.

### **3.1.2 Landing page analysis**

The government's website is located under the URL <http://www.my.gov.uz>. The page has six main sections, designed as tabs just under the logo and search bar. They are: All services, all organizations, short numbers, business, pending legislation, and online payment of utility bills.

Since the purpose of the page is mainly to provide services to the citizens of Uzbekistan, the major part of the website is designed to provide those services and almost the whole page is populated with information about services.

The webpage is self-explanatory, clear, and responsive. It uses blue and light blue colours as the main colours of the page. The font is either dark blue or white, which makes the text perfectly visible.

In the top right corner of the page you can find the most popular services, such as submitting appeal to State authority, which makes the life of the user much easier by saving a great deal of searching time. The webpage conveniently works across all the popular devices: PC, tablet, and smartphones.

By default “All services” tab is selected and the corresponding data is displayed underneath it.

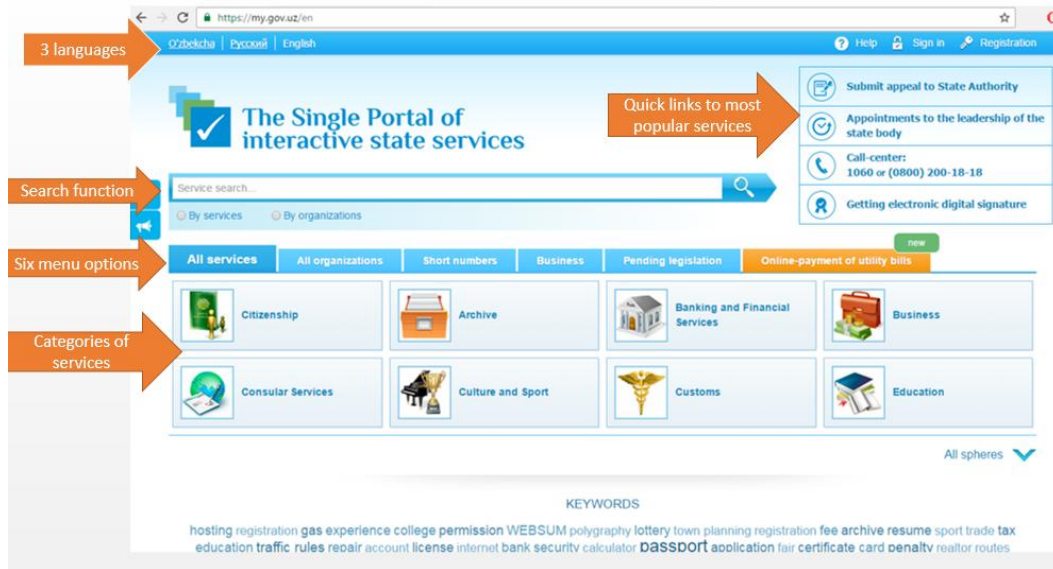


Figure 7. Landing page analysis.

(Source: The Single Portal of interactive state services of Uzbekistan)

### 3.1.3 Page structure

The State`s webpage is structured using a tab bar, which consists of six aforementioned sections. If clicked on any given tab, corresponding information appears underneath it. Those corresponding information is almost always either services or links to services. In fact, all the tabs and the whole webpage is created to structure dozens services provided by government for its citizens. Those services are divided into sections like business, organizations, or payment of bills by individuals.

Overall, the structure is quite reasonable and understandable. However, the page is a little bit too crammed with information, which sometimes may lead to the user`s confusion. The search function is located at the upper left part of the homepage, just under the logo. The search bar instruction reads: service search. That means that you can search only for services and the entire website is populated with all the possible online services by government. Just under the search bar you can make your search results narrower by clicking on one of the two “disc” options: “by services” and “by organizations”.

When tried to search the keyword “sport”, it was received 19 search results. The first link led to another page of the website surprisingly about information about domestic products, which is obviously not what was searched for. This means that the searching function of the page does not give the necessary results or at the very least the website merely does not contain specific information about such broad topic.

Nevertheless, all the results were available in three languages – to a great surprise: English, Russian, and Uzbek. It was expected that the results are either only in Uzbek or Russian, since the users that need those services and the potential users of the webpage speak Uzbek and Russian.

When tried to search for such words as “appeal”, “culture”, “citizenship”, regardless in which language, absolutely no result was found. It was concluded that the search function does not do what it is supposed to do, which is finding pages according to search keywords. Note that pages about “appeal”, “culture”, and “citizenship” were there in the website.

The webpage is available in three languages: Uzbek, Russian, and English. The structure of the webpage remains the same regardless of which language version you are viewing.

There is no clear main menu in the webpage. What is really there as something resembling a menu is three links, organized in the upper right corner of the page: Help, Sign in, and Registration. Another part of the page that can work as main menu is the six section bar located just under the search bar.

### **3.2 Provisions on the website**

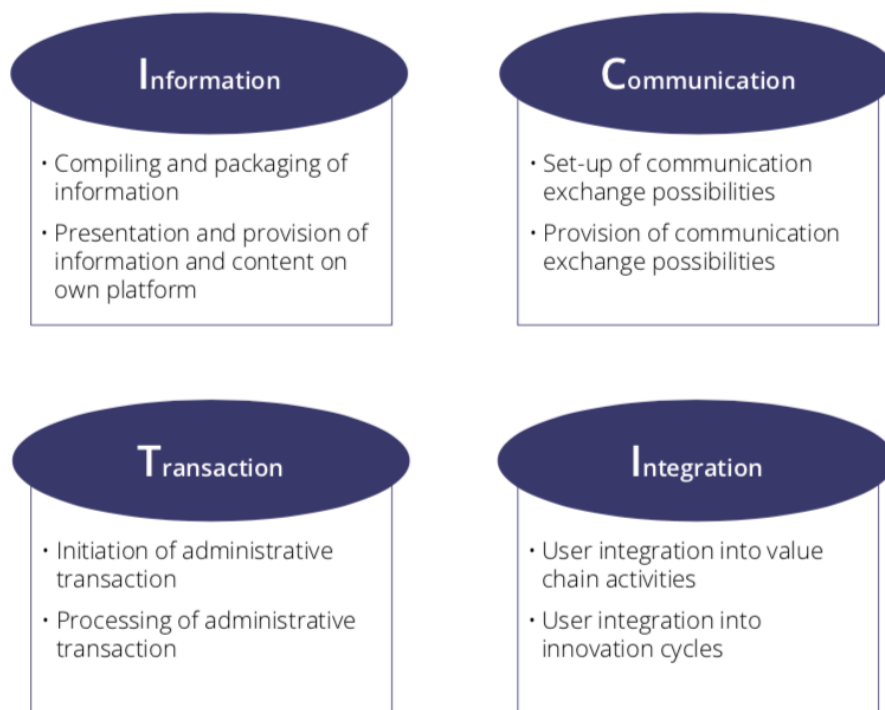
Classification of business models in terms of e-government can be represented in various forms. Wirtz and Daiser (2015) in their book “E-government. Strategy Process Instruments“ suggest that in this classification the primary service should be focused as a critical element.

Nonetheless, innovations and development of technology have made e-gov businesses much more complex and diverse, which created so many other criteria for classifications.

In this paper the work of Wirtz and Daiser has been employed as a main source for classifying business models. In other words, the primary service of e-government is focused at when classifying, analyzing, and – most importantly – assessing the business model.

According to Wirtz and Daiser (2015): „The relevant public business models in an e-government context can therefore be classified into four basic stand-alone business models: Information, Communication, Transaction, and Integration.“

In the figure below you can find those business models vividly explained as a chart.



**Figure 8. E-government business models**

(Source: Wirtz, B. W. & Daiser, P., 2015. E-government. Strategy Process Instruments. Chapter 4.2)

Each of the above four sectors can be used alone to design a government business model. However, nowadays most of the e-government portals employ a combination of a multiple or all of those four sectors.

Below, e-government portal of Uzbekistan is analyzed from all four perspectives: information, communication, transaction, and integration.

**Table 3. Information provision – Uzbekistan.**

Information	
Mandatory information	Non-mandatory information
<ul style="list-style-type: none"> <li>• General information about what services the government represents</li> <li>• Contact information</li> <li>• Instructions of the form for asking questions from the state</li> </ul>	<ul style="list-style-type: none"> <li>• Demography</li> <li>• Website visitors number information History</li> <li>• Sport</li> <li>• Culture</li> <li>• Infrastructure</li> <li>• Statistical data</li> <li>• Entertainment</li> <li>• List of websites related to the government</li> <li>• Whether forecast</li> </ul>

**Table 4. Communication provision – Uzbekistan.**

Communication	
Dynamic communication	Automated communication
<ul style="list-style-type: none"> <li>• Social networks</li> <li>• News delivery through apps</li> <li>• RSS Newsletter</li> <li>• Call center</li> </ul>	<ul style="list-style-type: none"> <li>• Search function</li> </ul>

**Table 5. Transaction provision – Uzbekistan.**

Transaction	
Partial online offer	Full online offer
<p>There is no online transaction service in the government website, since the banking system and the internet infrastructure of the country is not mature enough to afford online payments</p>	<p>No online offer</p>

### **3.2.1 Recommendations for improving the website and the services**

The state portal of Uzbekistan is designed having used contemporary design patterns and principles. Also, it has employed modern Internet technologies to provide the best experience for its users and to create a nice look and feel, although some more functionalities could still be added. Multiple versions (Uzbek, Russian, and English) of the website makes the website available for access to people of different backgrounds: both citizens and non-citizens, both locals and foreigners.

The text and information provided in the webpage does not vary across different versions of the page. Translations are accurate and clear. However, some more instructions and information in the English version of the website could make it much more valuable for foreigners. The whole website is conveniently structured under dozens of categories, such as “Business”, “Sport”, “Culture”, “Education”, “Citizenship”, “Archive”, and etc.

All of the popular services require registration, where users have to provide their full name, date of birth, contact details, and address of permanent residency. No digital signature or any other kind of identification proofs are required.

The following four recommendations are made to the state of Uzbekistan for the sake of improving the quality of the services provided in the webpage:

1. Improve the algorithm of dealing with search results when using the “search function”. Several times when tried to look for certain articles using related keywords, which were known for a fact that they existed in the website, the wanted results were not found.
2. Introduce the app of the webpage (and services provided) for citizens and non-citizens. This would considerably increase the number of people who would want to use the great number of services provided by the state in its webpage. Nowadays it has become a requirement of any significant webpage to have its own app, because people find it much easier and much more convenient to navigate through an app, rather than using the webpage through a browser.
3. Make it more secure employing digital signature or any other modern technology. Although the page is secured by https protocol, the webpage is still vulnerable to scams and hacks. Registration is rather easy and insecure, taking into account that

the webpage belongs to a whole state of Uzbekistan. Perhaps the state should consider making the registration process a bit harder for hackers to attack the servers.

4. Create sub-categories to make navigation through the webpage even more easier and even more comprehensible. A great amount of data contained in the webpage needs to be a more organized. Otherwise, the user will tend to be lost in so many different services presented. Another good suggestion in this regard would be to add a left-side column with categories, sub-categories, and sub-sub-categories of services.

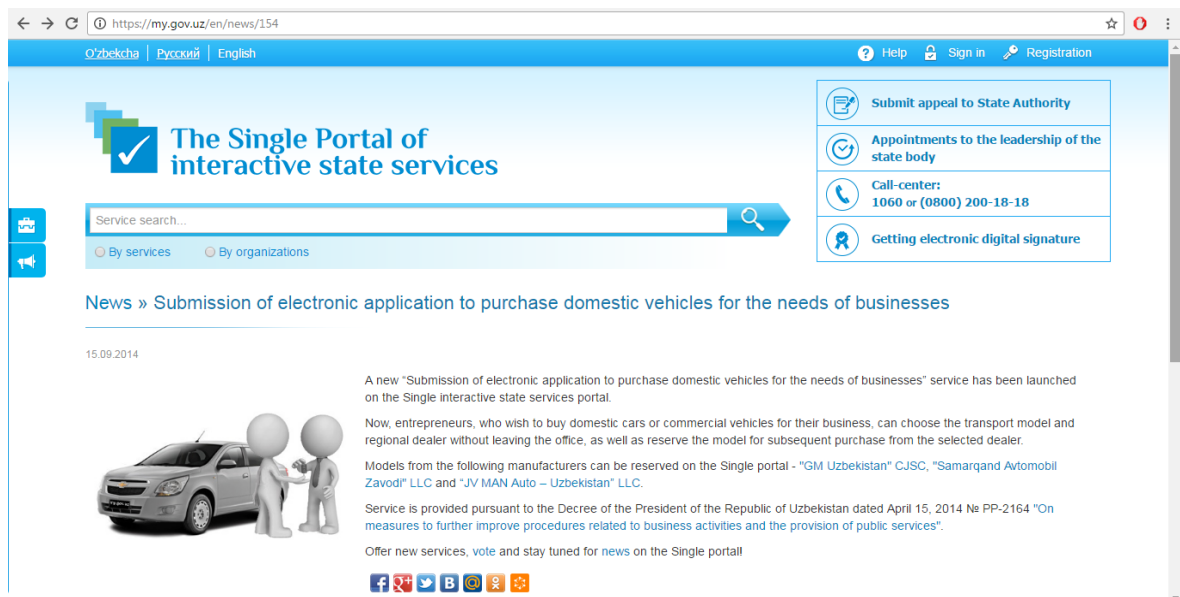
### 3.3 Analysis of gaps

The government of Uzbekistan owns a car manufacturing company and in the electronic portal of the government (my.gov.uz) they give information about cars. **However, the portal does not provide the service that would allow customers to register and make purchases of those cars.**

The author of this paper decided to address this issue in this project and propose a new e-service to the portal my.gov.uz. With this service people will be able to make registrations and make orders of the cars that the government is selling.

Currently the electronic portal of the government provide information about “electronic application to purchase domestic vehicles” (see Figure 1), but the portal does not offer the service of making online purchases or at least making online orders for the cars they want to acquire. There is also no possibility of making online payments in the website.





**Figure 9. Information about electronic application to purchase domestic vehicles for the needs of businesses**

(Source: my.gov.uz, 2018)

The page where the government website provides information about making purchases of cars contains links to external webpages of car manufacturing companies, where customers can find even more information about cars they want to purchase. The portal even has the possibility of making electronic application. The issue is that the portal does not really give the possibility of making a purchase of the car through the portal.

We believe that for any business of the modern world it is important to offer the service of making online transactions to customers. Online registrations and online sales have become an integral part of any contemporary company that wants to reach the majority of customers in the local market of the country.

We propose an e-service in a form of a mobile application, which customers could use for placing orders, as well as making online transactions to purchase a car.

### **3.4 Key stakeholders – CATWOE analysis**

In this section we are going to write about key stakeholders of the proposed e-service. We will employ CATWOE analysis. The analysis, according to Heeks (2006), involves customers, actors, transformations, worldview, owner and environment.

#### **3.4.1 Clients**

Although the cars are available for purchasing to anybody (both locals and foreigners), the vast majority of the clients of the service are assumed to be local people of the Republic of Uzbekistan.

Users of the application (or proposed e-service) will be required to enter their username, which the portal has provided them, their password, the model of the car the user wants to purchase, the colour of the car, and the credit card information for making an online payment.

### **3.4.2 Actors**

The main actor of the proposed electronic service will be the government worker who will receive orders for the cars. He or she will be required to report to the car manufacturer about the order and organize the delivery (or further action steps) for the customer who happened to place the order.

### **3.4.3 Transformation**

The most important functions that will add value for our service are as follows:

- Placing online orders for cars
- Selecting the necessary car model
- Selecting the desired colour of the car model
- Requesting a loan from the government or from the car manufacturing company
- Confirmation of the order
- Saving the draft of the order
- Asking for an expert advice
- Re-directing the orders to the relevant institutions
- Making online payments
- Notification of successful order and payment
- Official confirmation receipt papers

### **3.4.4 Worldview**

This application will reduce the time that both customers and car sellers have to spend on making a sale of a car.

It will be beneficial for the government institution that implements the sales in a way that it is going to become much easier to keep track of the number of sales, amount of profit and losses; it will reduce the paperwork which will lead to the increase in time-efficiency – they will spend less time collecting orders and making the payment transactions, because now most of the processes will become automatic with the use of electronic services.

The application will benefit the customers too. They will not have to commute to the designated government office, spend time waiting in the queues, fill out paper forms in

order to place an order for a car. With this application customers will have the convenience of placing an order without leaving their homes, filling the forms electronically, receiving experts consultation if necessary, and making payments online.

#### **3.4.5 Owner**

The owner of the application and the electronic service will be the government of Uzbekistan or the brand of the government office that is responsible for selling cars to customers.

#### **3.4.6 Environment**

Like in any other new project, we may encounter problems when implementing this new service. There are a few constraints.

First of all, legal questions arise when we will try to request information related to car sales from the management of the electronic government portal. The application that we are proposing must comply with the legal requirements of Uzbekistan. And the requirements can be really stringent, since it is associated with government data. We will have to justify every request that we are making to get each and every data.

Second of all, the financial resources to develop and implement this e-service can be a deterrent to our project. The service will require a certain budget to hire the necessary engineers, as well as business analysts, to develop. The solution for this issue might be to request funding from government budget, since this service will be part of income source that the government will be making out of its car selling business. Another solution might be to request funding from external financial institutions such as Asian Development Bank, which are willing to contribute to the development of countries like Uzbekistan.

### **3.5 Type of proposed e-service**

The service best relates to the category of government-to-citizen. Although the service allows people to register a car and one might think it is not a government service, but rather a business, the car manufacturing companies belong to government. That is why it is the responsibility of the government to realize the registration is also handled by the government. For this reason, it was concluded that it is not a business-to-customer category, but the service is the category of government-to-citizens.

Also, one might also oppose by saying that the service is not only for citizens and that is why it must be a “government-to-customer” category. That would be legit argument, if the

vast majority of “customers” were not citizens. Foreigners have no interest in registering their cars in this platform.

### **3.5.1 Maturity of the proposed e-service**

We consider the application as a service of maturity level 3, on the grounds that the application involves submission of personal information, online payment transactions, and registration as explained by Wirtz and Daiser (2015).

### **3.5.2 FURPS+ analysis**

Just like in any process of software development (Eeles, 2005), there are certain set of requirements for our proposed e-service. For this reason, we are going to employ FURPS+ analysis in order to make a comprehensive overview.

### **Functional requirements**

Our application should include the following main functionalities:

Registration – allowing the users to use their usernames and password to access the database of car models, as well as to prove their identity when making online transactions;

Photo upload – in order to prove the identity of the personality with variety of methods, and to verify the person who makes the purchase of the car, the application will require to upload a photo of a user. This feature can also be used to to upload documents that might be required during the process of transactions;

Notifications – the app will notify the users when something important is going to happen or has already happened, for example, when the ordered car is ready to be taken away from the shop of the company; or when the payment was confirmed to be successful;

Language options – Uzbek, Russian, English;

Expert`s advice – this feature is necessary to insure a quality customer service with customers, working with potential clients, and communicating with existing customers.

People might need a piece of advice or consultation when deciding what car model to choose, how to deal with certain mechanics of a particular car, and things of that sort. The application will help those customers to connect to experts of the car company;

Confirmation papers – this feature will make sure that all legal issues, burocracy, and paperwork are done in a right timely manner to insure a quality service for the customers.

Whenever a payment is confirmed to be successful, or in any other transaction, where bilateral agreements are concerned, receipts or confirmation documents will be sent to those customers through the app;

Online help – similarly to the function of “expert`s advice”, this function will help customers deal with issues related to the use of the car and machinery. Whenever they need consultation or help with issues they face, whether it is a legal or any other kind of issue, customers will always be able to find online help through this app;

Security – to ensure that there are as few hacks in the system as possible, certain security measures are to be taken, such as blocking robot access. These measures will stop the malware and other sorts of hacking tools to adversely affect the e-service.

### **Usability requirements**

The user interface should be easy and self-explanatory. Text and commands should be clear and commands. The service should be available as mobile applications too – Android and iOS. The service should be not disturbing, it should have light colours such as blue, white, black.

### **Reliability requirements**

There should be responsible people for the maintenance of the application; uninterrupted and always working communication facility for customers to contact experts of the field. Database and the whole system has to be regularly backed up and updated and the system has to be available at all times for customers.

### **Performance requirements**

Application size has to be less than 20 MB in order to let customers with non-advanced mobile devices to use the application without difficulties and delays.

### **Supportability requirements**

The application is supported by cloud technology to ensure high quality service and constant availability. Upgrades of the application are done with the help of App Store (for iOS systems) and Play Market (for Android devices).

### **Non-functional requirements**

The electronic service complies with all the legal requirements and takes into account legal constraints imposed by the government of Uzbekistan. The online transactions, as well as registration, and all the procures that requires customers to provide personal data, should comply with international copyright and intellectual property rules.

## Conclusion

The proposed e-service allows citizens of Uzbekistan to purchase cars online with the use of the application that they can download from the popular application stores (Play market and App store). The application will decrease the time that has to be spent by both customers and government officials on paperwork, payment transactions, and further procedures related to purchase of cars from the government of Uzbekistan.

This service and the proposed application will be provided by the government of Uzbekistan, since it is in the best interests of Uzbekistan to create facilities for their citizens to easily purchase a car that the government is manufacturing (with the help of external car producers).

The major purpose of the application is to make it easier for citizens and government officials to execute transactions related to car sales.

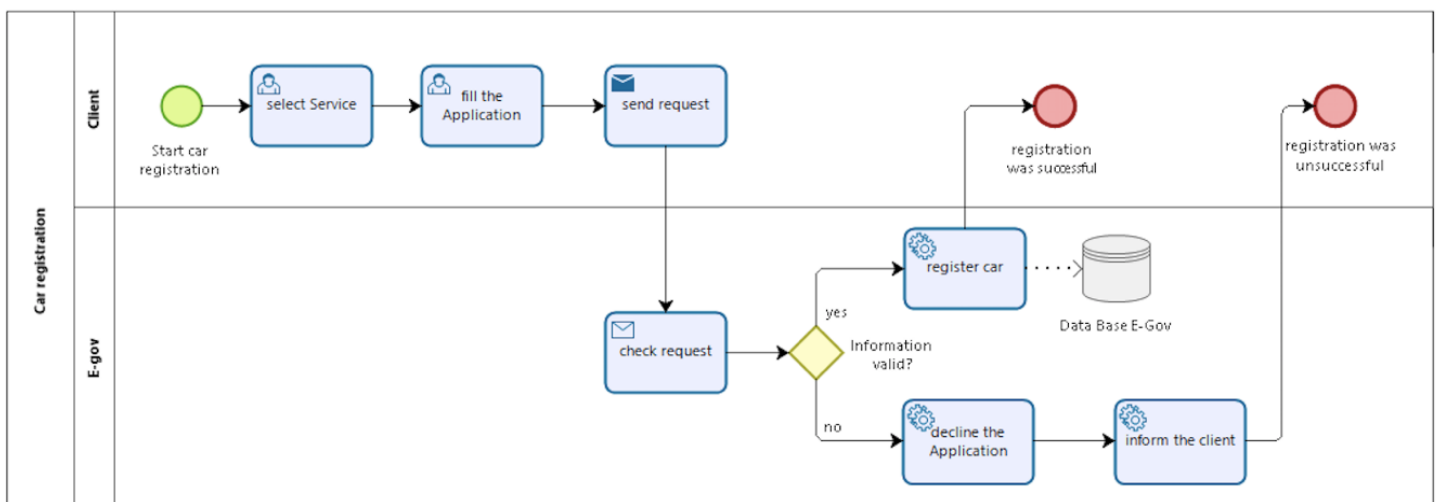
## 3.6 Proposal of a new e-service: online registration of cars in Uzbekistan

This section describes the actual proposal for the new service, which will be offered in the electronic government of Uzbekistan.

The proposal will be demonstrated in three forms: Business Process Model and Notation 2.0, use case diagram and prototype.

### 3.6.1 Business Process Model and Notation 2.0

This model describes how the client (or user) interacts with the car registration system and how this process looks like from the technical side of the system.



This process model describes the flow of the interactions from two perspectives: from the client and e-government (e-portal) perspectives.

The process starts with the first point of interaction “Start car registration” which is shown as a yellow circle from the upper left corner of the model. Then the user is asked to “select a service” from the given options. The possible options for the client to choose are as follows: register a new car, update registration details, delete a car registration from the database, and overview of the car.

Once the user has selected the relevant service, he or she then is then taken to the next page. In this model the assumption was that user chooses to make a new registration of a car, because this is the most important service of this application.

When the user hits “register a new car”, as shown in the diagram above, he or she is prompted to fill out an application form for inputting the registration details of the relevant car (see the Prototype section below to visually experience this part). The user fills out the form and hits “ok” button. The service “sends a request” to the database to check the validity of the information entered.

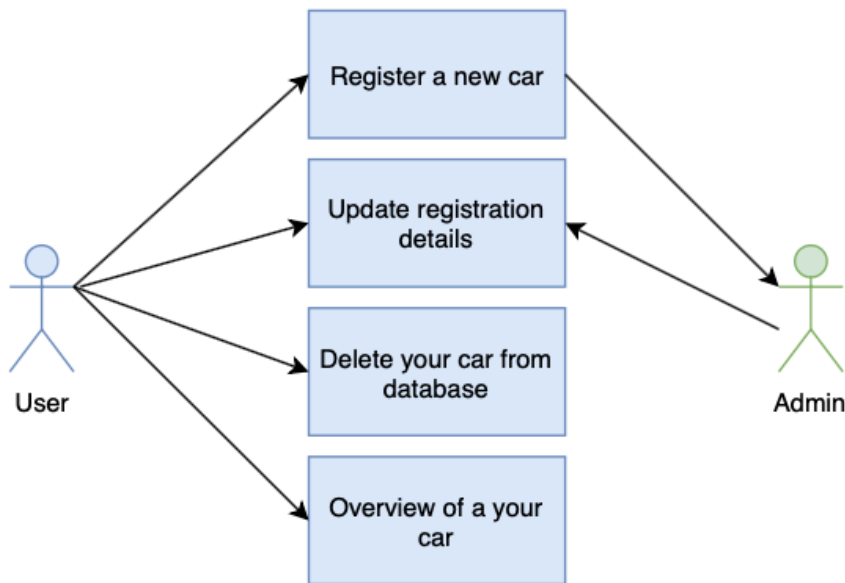
If the data provided is valid, for example when the date is given in a wrong format or it is too old, the application form is declined. Then the client is informed with an error message of “registration is unsuccessful” explaining what exactly was the problem. The user is then taken back to the registration part, where they can fill out the application form once again.

If the data provided in the application form is valid, the system triggers the “register the car” process, which makes a record into the database of the e-government portal about this particular car. The user is prompted a message of “registration was successful”.

This is how the model of the car registration process works from the perspective of Business Process Model and Notation 2.0.

### **3.6.2 Use case diagram**

This diagram is about how the user, administrator, and vehicle, each one of them being separate “actors”, will be interacting with the proposed solution for car registration in my.gov.uz.



The user, as shown in the diagram above, will have four options to choose from in the proposed solution: “register a new car”, “update registration details”, “delete a car from database”, and “overview of your car”.

When the user selects the service “register a new car”, he or she will be transferred to the registration form (see section Business Process Model and Notation 2.0 above) which the user will be requested to fill it out with such information about the car and the user themselves as name, surname, phone number, the number of the car plate, the model of the car.

If the user selects “update registration details”, he or she will then be taken to the page where the user will be able to change some of the details of the existing car registration.

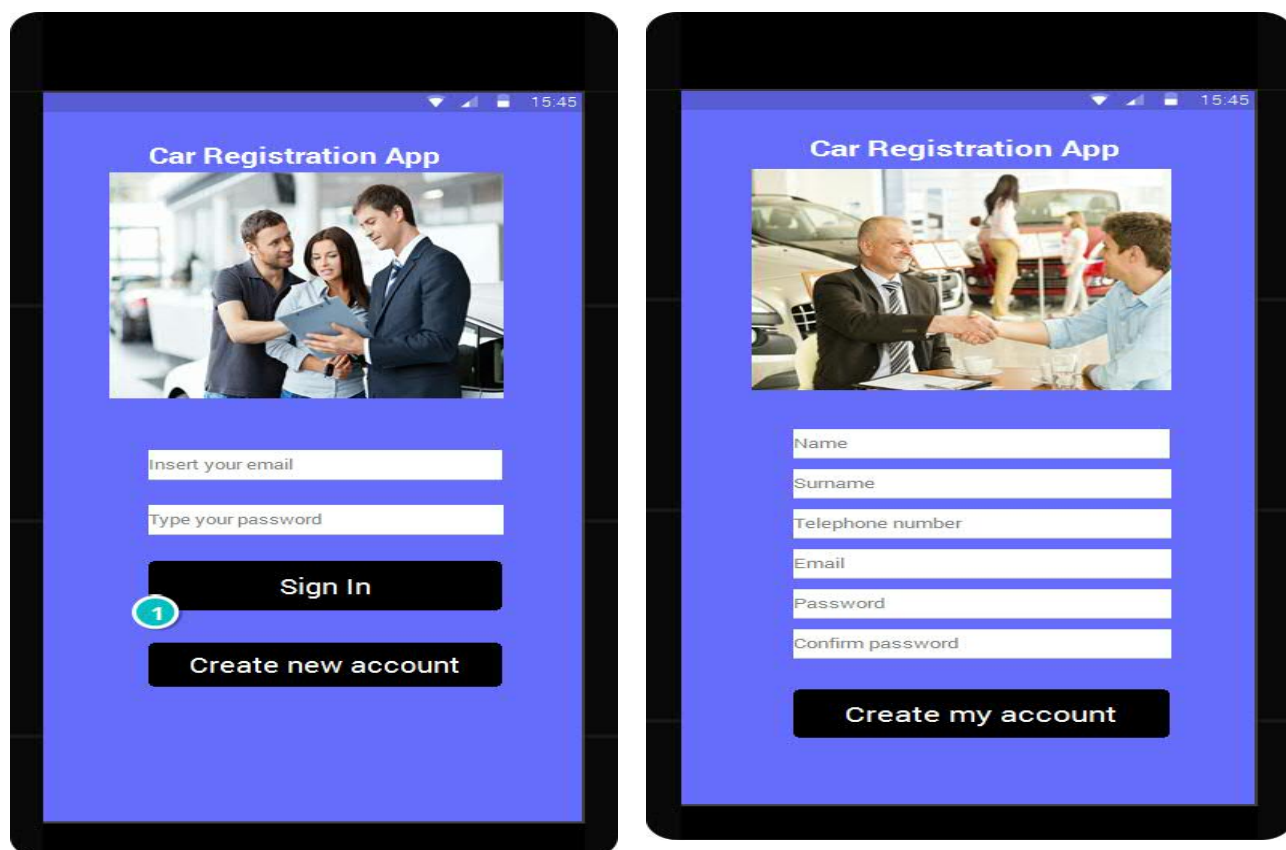
The option “delete a car from database” is available only for existing users, who have already registered their car in the portal database and now are willing to update some of the car details. The reason why the users would want to update registration details can be of different kind, for instance: the user changes the number of his car plate or the user wants to update his or her contact details such as email or phone number.

When the user selects “overview of your car”, he will be taken to the page where he will see all the information he had provided about his car. This way users will be able to double check if the information they had provided before are still valid.



The administrator (admin), on the other hand, has access to two of the services: registering a new car and updating registration details. In fact, the administrator will be merely notified about the registration of a new car, meaning the admin will not create a new registration on his own. However, the admin will update the registration details of existing records in the database. This might be necessary in cases where the user for any possible reason is not able to make those updates himself and needs the assistance of an admin. Another possible reason why the admin needs access to make updates to existing records is because sometimes users will input data in wrong format. The admin will have to update those data converting them into a right format.

### 3.6.3 Prototype of the application (GUI)



This is the prototype of the proposed application. The design of the proposed solution looks like this model, with blue background, simple forms, easy to navigate application.

## Results and Discussion

### 3.7 SWOT analysis

As in any software development process, we need to make a detailed analysis of our proposed e-service to ensure we have fixed requirements for our application. In this section of our project we want to make a SWOT analysis in order to evaluate our application, to find internal strength and weaknesses, as well as external opportunities and threats, of the proposed service.

**Table 6. SWOT analysis of the application.**

<b>Strength</b>	<b>Weaknesses</b>
<ul style="list-style-type: none"> <li>➤ Pioneer application of a brand new e-service; very few competitors</li> <li>➤ Free service</li> <li>➤ High security measures</li> <li>➤ Documents submission in electronic form</li> <li>➤ Notifications service, which helps create a constant communication with customers</li> <li>➤ Different language options</li> <li>➤ Available for major mobile markets</li> <li>➤ Accessible even for people with non-advanced devices</li> </ul>	<ul style="list-style-type: none"> <li>➤ No web application of the service</li> <li>➤ Internet connection in Uzbekistan is not available everywhere and all the time, which leads to difficulty using the electronic service provided by the government. As a result, not every citizen is able to benefit from the service</li> <li>➤ Downtime is not completely unavoidable</li> <li>➤ Because of problems with internet connection in Uzbekistan, servers of the e-service may not always be up and running</li> </ul>
<b>Opportunities</b>	<b>Threats</b>
<ul style="list-style-type: none"> <li>➤ Development of business model for the application so that it will generate income on its own, providing services to consumers</li> <li>➤ Development of web application</li> <li>➤ Creation of online community for peer-to-peer consultation</li> </ul>	<ul style="list-style-type: none"> <li>➤ Legal issues with the government of Uzbekistan</li> <li>➤ Legal constraints on copyright and intellectual property</li> <li>➤ Shortage of funding budget</li> <li>➤ Possibility of the development of similar applications</li> </ul>

(Source: author, 2018)

### **3.7.1 Explanation of the SWOT table**

Some of the strengths that the proposed public service has include the fact that it has quite few, if any, competitors in the field, because it is a new public service that does not exist at the moment. Also, the fact that the service is free makes it even more special, since currently people have to pay a service fee when registering their cars. With our proposed service it will be completely free of charge. Other advantages of the service are: high security measures, ability to submit document online, notification service to keep customers informed in the real time about the news, different language options, availability of the service in major mobile platforms.

That being said, the proposed public service has some weaknesses alongside its strength. For example, there is no web application for the service, although this can be done easily after we have built the necessary system for the service to function on the mobile devices. As well as this, there is a significantly big issue with the internet connection in Uzbekistan, which means not every citizen will be able to use the service. Downtime of the service cannot be avoided completely, although it will be brought to minimum.

The service has a few opportunities that can be taken advantage of in the future. For instance, the service can be turned into „paid membership service“ and collect membership fees from people. This way, the service can have a business model, which will be generating income on its own. Besides that, web presence of the service would be a good opportunity to be grabbed. Another opportunity is to the creation of an online community to create a model for peer-to-peer consultation.

Lastly, the threats of the proposed public service are that there might be legal issues with the government of Uzbekistan, such as constraints on copyright and intellectual property. There might also be shortage of funding.

### **3.7.2 E-services of a neighboring country Kazakhstan**

Kazakhstan is a developing country that is trying to build an information society making use of Information Communication Technologies.

In 2004 the President of Kazakhstan in his address to the nation (Toward a Competitive Kazakhstan, a Competitive Economy, and a Competitive Nation) specifically mentioned that

the Agency of Information and Communication develops a “National Program” for the development of electronic services for the general public of the Republic of Kazakhstan. This was one of the biggest initial investments that was made into this field.

According to Yerlan Amanbek who published his paper “Adoption of the e-government in the Republic of Kazakhstan”, some of the struggles that Kazakhstan is facing in the electronic public services sector include:

- Redunant bureaucracy in leadership
- Redundancies in public sector
- Too complicated system structure
- Lack of administration
- Poor distribution of information among public sectors of the government

One of the remarkable similarities of Kazakhstan with Uzbekistan is that almost all of the e-services of the Kazakh public sector is offered to people through one government portal.

## 4 Conclusion

The main objective of the thesis was to propose and design a new electronic public service in Uzbekistan. The objective was achieved through creating Business Model Process Notation 2.0, Use Case diagram, and a prototype of the service.

Some of the partial goals included to make a comprehensive literature review of the area of e-government with a special focus on Uzbekistan. That is why considerable amount of time and effort was spent to explain the matter of e-government in the life of a public, comparing a great deal of academic viewpoints on this matter. Then, electronic government in Central Asia was introduced, where e-government benchmarking was employed to compare the maturity level of the e-government in Uzbekistan, Kazakhstan, Tajikistan, and Kyrgyzstan (Central Asian countries).

The electronic government portal of the Republic of Uzbekistan was put under scrutiny. This portal was analysed from various perspectives and assessments. After that, we moved on to the Practical part of the thesis, where a closer look at the case of Uzbekistan was taken, evaluating the current state of the main portal of the country. Such issues as provisions and e-services on the website were discussed.

One of the objectives of the thesis was to find possible gaps in the e-government services of Uzbekistan. So, after making the assessments and evaluations in the practical part of the thesis, some of the visible flaws in the system were found. Then a few recommendations were given in order to fix those flaws and improve the quality of the e-government portal. As a part of the practical work, CATWOE and FURPS+ analyses were conducted with regards to the e-services offered by the government to the public.

In order to address the last partial objective about designing and evaluating a prototype of the new e-service, the proposal of the service was made: Business Model Process and Notation 2.0 was created; a Use Case diagram was drawn; and a Prototype of the proposed service was presented. Lastly, SWOT analysis with regards to the proposed e-service was done as a part of making an elaborate evaluation of the service.

Some of the limitations of the research is that there were not enough up-to-date and reliable data (for example surveys from local people) that could be used to identify the

needs of the public more effectively. That being said, the government of Uzbekistan as well as car registration agencies of the country would benefit quite well from the research conducted in this thesis.

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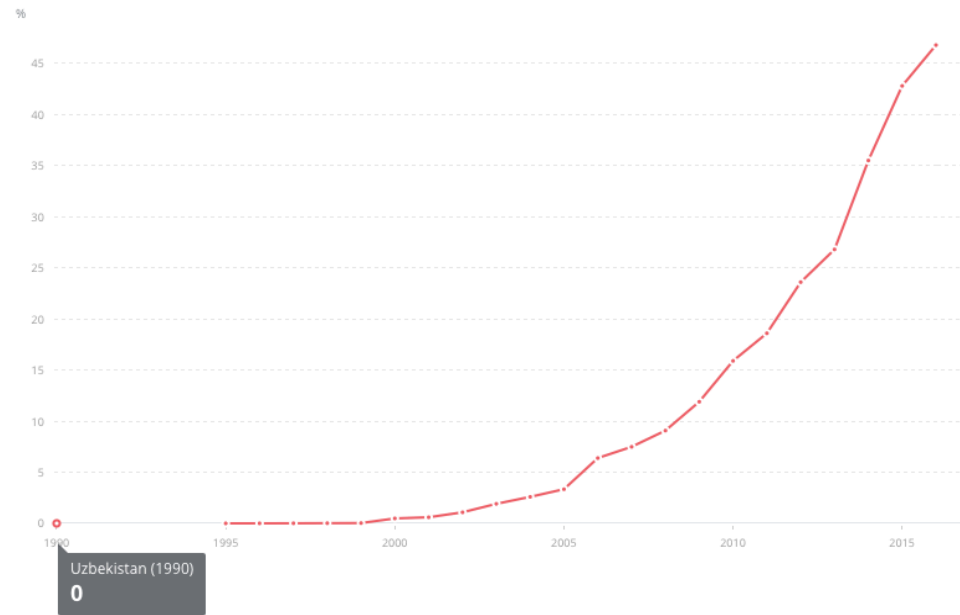
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## 6 Appendix

Figure 1. Internet use in Uzbekistan from 1990 to 2016 (share of population in percentage)

(source: The World Bank, 2018)



### Prototype screenshots

