# E-Government and its ability to reduce corruption

## The case of Estonia

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# Abstract

Developing an e-government in a state is a new thinking. One of the main priorities of the new European Commission is developing a strong interconnected e-government system inside the European Union. Beside of its cost-efficient benefits, e-government can play an important part in reducing corruption as well. As most of the countries in the world are fighting with corruption, e-government can be seen as a new way of doing it. E-government is thought to reduce corruption through increased transparency, better accountability, disappearance of the "middle-man" and bridging the gap between public workers and citizens. This paper tries to find out why e-government can decrease corruption by analysing these four factors in a selected case – notably Estonia. The used material consists of different statistics from Eurostat, Estonian Statistics, Transparency International, World Bank, as well as reports and secondary sources. The outcome of the analysis suggests, that the most effective factor seems to be the disappearance of the "middle-man", which is being followed by the increase in transparency and trust in governments, whereas accountability has remained constant throughout the years when e-government initiatives in Estonia has been developed.

**Key words:** E-government, corruption, transparency, accountability, trust in government, disappearance of the "middle-man", Estonia

**Word count:** 16 047

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# 1  Introduction

In the European Parliament Plenary session on the 15th of July, 2014 in Strasbourg, the candidate for the President of the European Commission at the moment, Mr. Jean-Claude Juncker, announced his top ten priorities and guidelines for the next Commission. The second most important policy area on that list was a connected Digital Single Market, under which Mr. Juncker (2014: 5) meant the better use of digital technology and its opportunities to bring the needed growth and sustainability to Europe`s decreasing economy. Digital Single Market (DSM) in its own is a big area, where many technological advancements should hasten the economical growth of European Union (EU) and make the life of its citizens easier. One of the pillars in the Digital Agenda for Europe[1] includes *"Information and Communication Technology (ICT) enabled benefits for EU Society"*. This section in the Digital Agenda is focused on the improvements that can be made to provide and deliver better public services. Basically this means the development of more technologically advanced and improved e-governments, which eventually should lead to more efficient and trustworthy governments.

The introduction of Information and Communication Technology in public administration is an innovative solution to make it more efficient and provide more dynamic working methods (Archmann & Iglesias 2010: 29). As the public administration is constantly changing in this rapidly developing world, the need of new innovations and solutions in this field is essential. Here, the Information and Communication Technology, or in short ICT, comes in handy. It is generally believed nowadays, that the future is in the online – more and more services and industries are moving towards digitalisation, thus if the governments of the European Union want to keep up with the changing world, they need to digitalise their government and states. This gives them the advantages to be more efficient and it does not just mean them being more innovative, but it helps them to reduce fiscal costs and time overall – time and money, which are really important driving factors of the present world.

Although the usage of ICT in public sector can benefit in a various ways - for example it can produce us cheaper, faster and better public services - it can also help governments to make the whole public sector more efficient and trustworthy through the provision of more transparent and accountable governments. Likewise, in this fast developing and modern world, this has become one of the new ways to fight socio-economic problems within a state, e.g corruption that can severely hinder possible economic performance and have negative impact on the society.

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[1]Digital Agenda for Europe is divided into 7 strategy pillars based on what Digital Single Market should be built upon, [Electronic] Available: http://ec.europa.eu/digital-agenda/en/our-goals/pillar-vii-ict-enabled-benefits-eu-society , Download date: 19-05-2015

Although the positive effect of e-government to the corruption is still under debate, many researchers have found links between these two concepts (Bhatnagar 2003a; Andersen 2009, Shim & Eom 2008; Kim et al. 2009).

## 1.1    Why e-government?

Governments usually want to be more democratic, transparent, accountable, so they could move closer to the citizens and in that way make their lives easier. To do that, there have been many improvements and developments in public administration over times, thus the idea is to make the public sector work more efficiently and that it could provide better services to citizens. Orzan &Velicu (2013: 110) have stated, that the past 30 years have been more innovative in public administration than ever before, but the solution for the perfect idea has not yet been found. According to Archmann & Iglesias (2010: 31), $21^{st}$ century governments have to be able to meet the challenges and requirements of the surrounding environments, thus the main idea in the public administration has to be around the well-being and needs of citizens, instead of the administration itself. It means developing faster and better services, more accountable and transparent governments to earn the trust of people and in the light of economies, more cost-efficient governments. Rapid changes in the area of Information and Communication Technology in the past decades have had significant importance to the governments and its public administration (Orzan & Velicu 2013: 111). The use of ICT tools by the governments to strengthen their relationship with citizens, bringing more efficiency in their actions and making everything work more coherently is the new thinking (Ndou 2004: 1-2).

All these initiatives have a central relevance, when talking about governments and their adoption of Information and Communication Technologies. The fact is that the digitalisation of governments and introduction of ICT skills in public administration is closely related with transparency and can have an important effect to the reduction of corruption, because of the interconnection between administration databases and the possibilities to cross-check them (Hodos 2014: 120). As the corruption has usually a negative socio-economic impact to the societies, the introduction of Information and Communication Technology in governments can be seen as a way of reducing it. Although it has been said that the electronic governments have a positive impact to the corruption level, the important question here is whether the introduction of the Information and Communication Technologies inside the governments can actually decrease the corruption and if so, then why? Thus the research question of this thesis is following:

*"Has the introduction and development of e-government led to lower levels of corruption? And why?"*

The author of this thesis is of the opinion that the following hypothesis (H) will help to answer the previous question:

*H: "The introduction and development of e-government initiatives in public sector will lead to the reduction of corruption in a State."*

# 2 E-government and its relation with corruption

*"E-government has become a world phenomenon"* in the words of Rabaiah & Vandijck (2009: 241). This illustrates well the introduction of Information and Communication Technologies initiatives to the traditional government forms. It is a growing trend around the world adopting these new technological innovations to their government reforms. According to Pina et al. (2009: 1137), the development of web-based technologies for governments and its services has nowadays the same trend as the New Public Management (NPM) reforms had back in 1990`s. The need for new reforms in public administration is based on the knowledge that the governments have to be more and more flexible and meet the demands and standards of citizens. Through the experiences of past decades under the development of ICT skills in public sector, the realization that the initiatives of e-government can actually provide better services with lower cost and higher values, is evidently there (OECD 2005: 11). Like Evans & Yen (2006: 207-208) have said, citizens expect the same twenty-four hours a day, seven days a week services from their governments like consumers do, thus increasing their role in democratic processes also. E-government can provide that - it is constantly available, where the only problems arise when there should be some maintenance procedures (Hodos 2014: 120). But these issues will not come up that often.

Besides all these cost-efficiency benefits that Information and Communication Technology can provide to the governments it is believed that an e-government can decrease corruption levels through increased transparency and accountability and strengthen good governance (Von Haldenwang 2004: 427). It can be a tool against corruption by providing more transparent information and increased accountability.

Although e-government may be understood easily by the readers, the author of this study finds that the concept needs to be elaborated thoroughly. The same goes with the concept of corruption, thus the next section will give a brief overview of these two terms.

## 2.1 What is e-government or electronic government?

E-government is a relatively new concept. The concept of e-government may have slight differences in its definition, but basically it means that the government is working through digital world and the communication between government and

citizens are conducted by the use of electronic means (Means & Schneider 2000: 121). Unfortunately the concept of e-government is still partly vague, because many researches are using it in a different way. Understanding the concept may be difficult, but the most common definition of it has been launched by OECD, which states: "*e-government is the use of information and communication technologies (ICT`s), and particularly the internet, as a tool to achieve better government*" (OECD 2003: 23). Other definitions would include the United Nations one, which defines e-government as government transformation of external and internal relationship with the help of information technology (United Nations 2008: 69). Usually the concept is defined in different ways depending on the perspectives it represents, whereas the researchers mostly agree that it is the utilization of ICT`s with the aim to promote governance and make public services better (Abu-Shanab & Khasawneh 2014: 6). The author of this study is also of the opinion, that e-government means the adoption of Information and Communication Technology (ICT) initiatives to provide more effective public services and achieve better governance. Therefore, one of the best definitions of e-government are from OECD and United Nations, which are being used in this thesis for the meaning of electronic government. According to Pina et al. (2009: 1138), e-government may be divided into broad and narrow areas, where narrow approach means that the private sector experiences have been adopted to the public sector, whereas in broader sense, e-government can refer to the main idea of governance, where it should increase transparency and accountability of governments. Thus, as transparency and accountability are linked closely with the concept of corruption, the thesis will focus on broader sense of e-government.

Furthermore, e-government includes transactions from government to citizens (G2C), government to businesses (G2B), government to government (G2G) and government to employees (G2E) (Giannakopoulos & Manolitzas 2009: 291) The main focus in this thesis will be from government to citizens (G2C). Evans and Yen (2006) have stated, that the form of government to citizens (G2C) can be understood as how government and citizens communicate with each other in a more efficient way through the development of electronic services and it includes other benefits that have been offered to the citizens in an electronic manner. The author of this thesis is focusing on the form of government to citizens (G2C), because this form is closely related with the public sector. For it to be easier for the reader to follow the topic, a brief overview of public e-services will be given.

### 2.1.1 Public e-services

The use of electronic services in public sector organizations is a growing trend. However the problem comes with the notion of public e-services, due to the "ghetto-ization" of the term (Pollitt, 2011: 378). Because of that, there is a "*difficulty for researches to build a knowledge in a cumulative manner*" (Lindgren & Jansson 2013: 163). The term itself represents two things: "e" and "service", where "e" means that something is done electronically and "service" represents something intangible (Lindgren & Jansson 2013: 163). Therefore the notion can be taken from

both sides. Lindgren & Jansson (2013: 164) also point out that the notion of public e-services has suffered from "conceptual stretching", which means that the notion itself can be everything or nothing and it is essential to understand the complexity of it. Omitting one definition to it can exclude some other. The simplest way to understand the notion is that an: *"e-service is a service that is mediated through the use of information technology"* (Lindgren & Jansson 2013: 166). Thus, the author of this thesis is using the definition of e-service published by Lindgren & Jansson (2013), because he finds that this represents the best the basic idea of public e-service, where government is providing the needed public services via internet and with the help of information technology.

## 2.2    Defining the concept of corruption

*"Corruption is a form of crime"* (Huisman & Walle 2010: 115). Probably most scholars can relate to that. The definition of the concept of corruption is still vague, although it has been researched for a long time. The most commonly used definition of the concept is a "misuse of public position for private benefit" (Nye 1967: 419). However, the problem with this definition is that it relates to only with *public* sector, thus leaving out the private sector. But corruption can have an effect to that sector also. The reason why there is not that many talks about private sector corruption, is because it is very difficult to tackle it and the availability of information about it is weak (Rose-Ackerman 2007). Therefore many scholars try to research and analyse more often public sector corruption. According to Goudie & Stasavange (1998: 115) corruption is hard to define, as some try to define the concept, while others are not trying to define it *per se* but to research the area's most attracted to the authors. To ease this "conceptual vagueness" of corruption, the author of this thesis broadly defines the concept as the use of public office for private gains, as the topic of the thesis is looking corruption inside the public sector.

Although the broad definition of corruption can elaborate the concept already, some researchers have divided the concept into two to explain it better. One way is to focus on "political corruption" and the other way "bureaucratic" or "administrative" corruption. Andvig et al. (2000) separate these two also as grand corruption (political) and petty corruption (bureaucratic or administrative). The difference between these two are that political or grand corruption takes place in the highest levels, while petty or administrative corruption emerge in the implementation level (Andvig et al. 2000: 18-19). According to Andvig et al. (2000: 19), the distinction is based on the Weberian separation of politics from public administration. It means that corruption can be done in the bureaucratic or in the political system. Andvig et al. (2000: 19) add that political and bureaucratic corruption can function together, where grand corruption is being supported by petty one. However they add that bureaucratic corruption can be controlled if there is a political will or ability to do so (Andvig et al. 2000: 20). Thus it means that the political system does not have to be corrupted, whereas bureaucratic system without corruption is almost impossible. Bardhan (2006: 341) has said that whereas

politicians are under more scrutiny by citizens and opposition, public administrators are usually accountable only to their supervisors. Thus, bureaucratic corruption is difficult to tackle as well. However, the more accountable they can be for the citizens, the less corruption there ideally should be. As said before, the author of this thesis is using the broader sense of public sector corruption, and thus the thesis analyses both political and bureaucratic corruption together.

According to the Global Corruption Report, conducted in 2003, e-government can have various impacts on the levels of corruption, through greater transparency (Bhatnagar 2003b: 30). Although it can be an incidental impact, e-government reduces arbitrary actions from bureaucrats and the fear of getting caught more easily can refrain civil servants from being corrupt. The relation between e-government and corruption is well brought out in the 2003`s Global Corruption Report:

> *"E-government offers a partial solution to the multifaceted problem of corruption. It reduces discretion, thereby curbing some opportunities for arbitrary action. It increases chances of exposure by maintaining detailed data on transactions, making it possible to track and link the corrupt with their wrongful acts. By making rules simpler and more transparent, e-government emboldens citizens and businesses to question unreasonable procedures and their arbitrary application."*

Now let us look more closely, how and why e-government can reduce corruption.

# 3 Previous research in the field

The development of new information and communication technology (ICT) have led to the usage of e-government in different states. Many policy-makers and researchers believe that the introduction of e-government plays an important role in reducing corruption and increasing transparency, thus lessening the discretion of officials and in the same time improving interactions between the government and its citizens (Bhatnagar 2003a; Sturges 2004). Most of the existing researches in this field have focused on the quantitative research and correlations between states' e-government readiness indexes and corruption indexes. But so far there are not so many studies that try to relate the introduction and development of e-government with the change of corruption level in public sector. There are some studies that have focused on just one country, but those researches have not fully aimed to explain why e-government initiatives can be behind the decrease of corruption. Moreover, these researches have given a good insight whether there is a link between these two concepts, but they do not show exactly, why the development of e-government can reduce corruption. In a big term, there are three lines of how researchers have dealt with this field.

## 3.1 Cross-country data and indexes

One of the researches done in this field is by Shim & Eom (2008). According to Shim & Eom (2008: 302), e-government can lower corruption by bridging caps between public workers and public itself. All the work processes between these two are monitored by the Information and Communication Technology (ICT) systems, which help to discover corrupt behaviours by analysing the digitalized data, and this makes detection of corrupt behaviour more efficient (Shim & Eom: 2008: 302-303). The authors mentioned that e-government can bring greater transparency to public sector through strengthening reform initiatives, allowing citizens to track activities and monitor and control government employees (accountability) (Shim & Eom 2008: 303). Authors carried out their study by examining how the usage of Information and Communication Technology (ICT) skills affect corruption, comparing both the corruption and e-government indexes. They used Corruption Perception Index (CPI)[2] developed by Transparency International to get the corruption data for national levels. For describing the e-government, they used three

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[2] The Corruption Perception Index by Transparency International ranks countries based on their perceived levels of corruption, [Electronic] Available: http://www.transparency.org/research, Download date: 19-05-2015

different factors: e-government readiness index by United Nations, the United Nations e-participation index and internet penetration in countries. Besides these three factors, the authors also added traditional measures used to fight corruption, to see which ones are more useful. They found that the validity of the Corruption Perception Index has been proved already by different researchers (Husted 1999; Wilhelm 2002), thus it is reliable to use it. The authors concluded that both e-government effectiveness and e-participation have a statistically significant and critical effect on the corruption levels even as much as the old traditional ones under which Shim & Eom (2008: 300) used professionalism, increase in bureaucratic quality and effective changes in laws. Especially an e-government effectiveness coefficient remained robust throughout the models the authors conducted, thus giving some generalisation about the relation between e-government and reduction of corruption. The weakness of this study is that these two e-government indexes do not show why e-government can reduce corruption. This is also mentioned by the authors themselves, admitting that further research in this field is needed.

Another research published in this field is by Andersen (2009). Andersen (2009: 202) brings out that in the light of anecdotal evidence, there are many ways how e-government can eliminate corruption. It can reduce contacts between public administrators and the users of public services, thus leaving out the "middle-man", who might use corrupt practices and can empower citizens to challenge corrupt and arbitrary bureaucratic action (Andersen 2009: 202). Andersen evaluates the impact of e-government on corruption through two indexes, but taking different ones than previous authors. Andersen uses World Banks Corruption Control (CCI) index over the period of 1996 to 2006 and compares it with e-government maturity level data, taken from West (2006) e-government index. The study itself is a complex one and it is hard to understand the empirical framework. However the results are clear. The study shows that increase in the use of e-government will lead to the reduction of corruption levels, especially in non-OECD countries. Likewise the study shows correlation between e-government index and corruption index, thus concluding that e-government is a useful tool for reducing corruption in countries. However Andersen (2009) fails to reason why e-government can reduce corruption.

The problem with these two studies is with the different indexes they are using, which is also pointed out by Grönlund & Flygare (2011). The latter authors try to find out in their paper if there is some correlation between these different corruption and e-government indexes, in an attempt to see if they are compatible. The study tests a number of indexes most often used in the literature and tries to find an answer to four research questions. The results show that the corruption indexes (CPI and CCI) are strongly correlated, thus having high linear dependence, but e-government indexes have a wide variety in correlation from weak to strong. This means that e-government indexes can be really different from index to index, making the conclusions of different studies dissimilar. This study also shows that the e-government index by the Economist has the strongest linear correlation with the corruption indexes over the years, followed by the United Nations e-government survey. As the Economist has not developed its e-readiness index after year 2009, the best seems to be United Nation`s one.

The studies of Andersen (2009) and Shim & Eom (2008) focus only on indexes. As the indexes are different by their means and how they are compiled, it is fairly difficult to come out with conclusive results for the relationship of corruption and e-government. These studies are good to know and show that there are correlation between corruption level and e-government, but that is all. Grönlund & Flygare (2011: 236) likewise mention that although these researches end with positive results, they are not that convincing because they have chosen only some indexes out of many, thus leaving out the others and not even mentioning them or giving an explanation for this. This does not mean that the outcome would have changed a lot, because the studies show a strong correlation between the two concepts. Understandably, these indexes are the best ones if the researchers want to grasp as many countries as possible and figure out if there is correlation between e-government and corruption, but there still might be a slight problem with these studies. Although, they mention what factors can reduce corruption, they do not explicitly try to figure out if these factors have an effect to the corruption in a state. So if there is a need to know how e-government changes corruption levels and whether it happens because of these factors, case studies should give more insight and show how much actually (if at all) corruption levels decrease after the development of e-government.

## 3.2 Case studies of certain phenomena or e-government initiative

Quite a few researches in this field have focused on one case or phenomena of e-government initiatives. One of these is made by Kim et al. (2009). Likewise the other authors before, Kim et al. (2009: 43) bring out that e-government could reduce corruption by increasing transparency. The authors studied one particular case in South-Korea. They tried to examine the OPEN (Online Procedures Enhancement for civil applications) system of the Seoul Metropolitan Government, which is a system that is made to reduce corruption through e-government. This is one of the few studies that really focused on one case and tried to understand the relation between e-government and reduction of corruption. The authors had four research questions that mainly focused on the theoretical perspective on the development of e-government system. They looked into the processes of how e-government system is being adopted and in their opinion, the study contributed to the theory and practice of e-government, using institutional theory as a theoretical background. The study showed that e-government initiatives can reduce corruption. As well, the authors found that the system made positive impact to the reduction of corruption in Seoul Metropolitan Government. The paper also included suggestions and guidelines how to implement an e-government system in the way that it will reduce corruption (Kim et al. 2009: 48-49). The only problem came with the methodology, as they interviewed civil servants, thus leaving out public opinion for the OPEN system. However, this was brought out by the authors themselves. Although it is

hard to integrate public`s point of view in this field of studies, it is still an important part, therefore making it a slight problem.

Other specific case studies of e-government initiatives are from Bhatnagar (2003) and Bhatnagar et al. (2007). Bhatnagar (2003: 24) explains that e-government can decrease corruption by multiple ways: outcomes of government decision, more transparent information, taking away opportunities for arbitrary action, possibility to track transactions, and decreasing the tolerance against civil servants who are being corrupted. All these are producing more disincentives for officials to be corrupted, because it increases their chances of being caught. In his studies, he researched e-government project in local governments in India and found that there are relation between e-government and reduction of corruption. These studies focused mainly on the systems developed in rural areas and tried to figure out if they have any effect to the corruption level. The results concluded that there is decrease in corruption levels. The research from Bhatnagar et al. (2007: 7-8) also recognised that the primary objective of e-government is to improve service efficiency, but they are helping out in the reduction of corruption through the increase of transparency. Moreover, they point out some ways, how e-government can decrease corruption in a state, thus adding a valuable insight to this.

Transparency is one of the most important drivers for the e-government, according to Kim et al. (2009: 43). In addition to this, Moon (2003) suggests that e-government could restore public trust through more information and regulations provided by the government itself, making public services more interactive. Smith & Bertozzi (1998: 2-3) point out that the relationship between governments and citizens go through principal-agents theory, where governments can control the flow of information more, making them more prone to corruption. Here the e-government helps out by making the monitoring of the government easier, thus improving the accountability of governments. According to Ojha et al. (2008: 164) e-government helps out: *"by facilitating audits, preventive checks, and ongoing investigation of corrupt acts already detected."* All these can be put under the possibility to hold public sector more accountable, because they are closely related with this.

## 3.3    Direct effect of e-government on corruption

Third line of researches in the field of e-government and corruption that should be mentioned is concentrating on the effect of e-government on corruption. One of these studies is done by Mahmood (2004). In his paper, the author brings out the effects of e-governments to corruption and in what way e-government can reduce corruption. There are not many studies done in this field, but the ones there are do not give insights on how e-government specifically leads to lower level of corruption. Although Mahmood (2004) tries to figure out how and why e-government can combat corruption in the developing world, it focuses more on discussing the citizen's experiences of e-government and corruption, leaving out the real factors that can decrease corruption through e-government. However, the

main idea behind this research is similar to this thesis, although it does not give any specific answers to the how and why question.

# 4    Theoretical and analytical framework

In this section, the author of this thesis constructs a theoretical framework, based on the previous researches in the field, to see why e-government initiatives can lead to the reduction of corruption in a country. To do so, the author points out the factors that were mentioned before, which can lower the levels of corruption through e-government initiatives. This will help to elaborate the causal relationship between the potential factors and the e-government and corruption.

Based on the previous researches done in the field of e-government and corruption, in a broad perspective, the studies bring out 4 basic factors that can reduce the corruption levels in a given state (Andersen; 2009, Shim & Eom; 2008, Kim et al. 2009 etc.). Likewise all these factors are related to Information and Communication Technology and the development of e-government. First factor is leaving out the so-called "middle – man", which in this case means the loss of a civil servant between the public itself and the services they are obtaining. Second factor is the increase of transparency overall. Under here goes also the detection and discovering of corrupt behaviour by the civil servants and politicians. Detecting corrupt behaviour is easier, when the system itself is more transparent, thus e-government should ideally lead to more efficient way of finding corrupt behaviours. Third important factor is said to be the accountability that comes with the development of e-government. This means, that tracking the transactions of the government employees is visible and the same goes with monitoring and controlling their official activities. This hardens their opportunities of being corrupt, as all their movements can be traced, therefore it is not wise for them to be involved in illegal activities. And the fourth factor that relates with the relationship between an e-government and the reduction of corruption, is bridging the gap among citizens and public workers.

As well, it is important to mention a factor that has a relevant place in the causal relationship. This factor is the usage of internet and computers by the main population of a state. The factor itself comes before the other four factors, meaning that, the more people are using computers and internet, the better chance there is, that these four factors have an effect on the corruption. If there is only a few people using internet and computers then e-government initiatives are not used probably also. And if the e-government initiatives are not being used then it is hard to say that these four factors may have an effect on the reduction of corruption.

The author of this thesis assumes that if more people are using internet and computers, then there is a greater chance that e-government can have an effect to corruption. Transparency, accountability, disappearance of a "middle-man" and bridging the gap between government and citizens are all interconnected somehow

with each other, however, each of them has their own separate way of changing the outcome of the corruption level in a country. Although all these factors can be interlinked, they should be interpreted differently, because although they all can have an effect to the corruption levels, some factors might happen alone also. Some factors can happen and have an effect to corruption in the same time while the others do not change.

The introduction of e-government initiatives can make the so-called "middle-man" to disappear, but this does not necessarily mean it will always happen in a major way. The second and the third factor, which are transparency and accountability, are most connected with each other, thus one may have greater effect to the other and vice-versa. The last factor, bridging the gap between public workers and citizens or building greater trust, can have a significant effect on the reduction of corruption, however, of all the named factors, this may take the longest to actually affect the levels of corruption. These 4 factors can be put into a causal relationship together with the usage of internet and computers in a state. After a while they can lead from the introduction and development of e-government to the reduction of corruption in a country. The causal relationship between the latter and the first should be therefore the following:
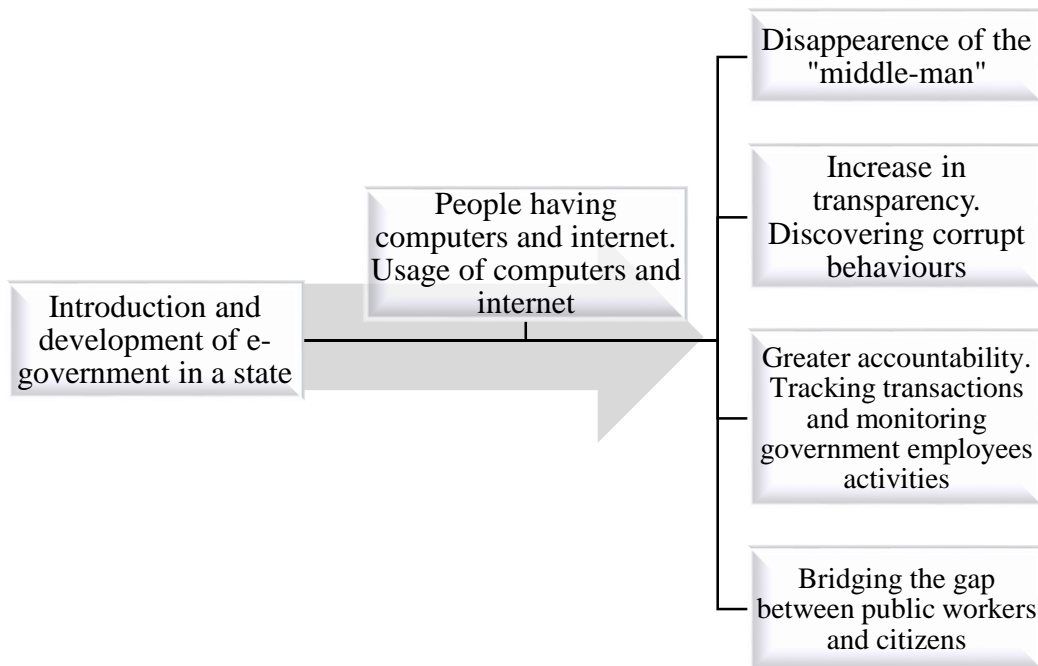


Figure 1. Proposed causal relationship between e-government and the decrease in corruption in a state.

## 1. Disappearance of the "middle-man"

The first factor between the causal relationships is the disappearance of a "middle-man". This is because after the introduction and development of e-government initiatives, the need for a specific public employee who deals with the

paper-based processes, disappears. Most of the public services can be done through the internet. Of course many people still trust more the old paper-based processes or are not that used to the usage of information and communication technology, but the possibility is available for those, who like to use the services quickly and easily over the internet. According to Sandoval-Ballesteros (2014: 416), there is a belief that the corrupt public servants are just filling their pockets with money at the expense of citizens. If you take away the opportunity from the civil servants to be corrupted, by transferring the services to the internet through the e-government, where there is no need for the "middle – man", it can reduce corruption. That is because of the direct communication between the citizens and government. This has been said by Charoensukmongkol & Moqbel (2012: 54) also. Correspondingly they say that e-government can reduce corruption, because it takes directly away face-to-face contacts with the public employee, thus decreases the chances of taking briberies or being corrupt in other ways. This is a direct effect of e-government initiatives, as automation removes a civil servant, who could be corrupted (Grönlund 2010: 8).

## 2. Transparency

Subsequently, another factor that can lead to the reduction of corruption in public sector is the increase in transparency. Leaving out the public employee and doing things by yourself through the internet provides a way to detect and discover corrupt behaviours more efficiently, because it leaves behind an information track and saves every movement somebody has done. Vishwanath & Kaufman (2001: 42) have stated that transparency includes such attributes as accessibility, quality, reliability and relevance of the information, thus there is lack of transparency if the information is irrelevant, misrepresented, untimely or inaccurate. E-government can reduce the time the service is being delivered, this increases accuracy of the information and leaves little opportunities for public servants to be corrupted (Shim & Eom 2008: 299). The reason why transparency is being thought of as one of the main factors in the reduction of corruption[3], is because public officials have to justify their every decision and it leaves a little room to be discrete, thus making a way to the accountability of public employees (Carr & Jago 2014: 471).

## 3. Accountability

Tracking government employee's transactions and monitoring and controlling their official activities are made easier through e-government initiatives. DiRenzio et al. (2007: 322) state, that if there is a better access to the information and it's more available and transparent, it will lead to a greater accountability. Similarly, according to Holzner & Holzner (2006: 100), transparency is linked with accountability, where citizens can monitor the quality of public services, which eventually leads to the satisfaction of citizens. However Pina et al. (2007: 585) state

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[3] Brought out by Kim et al. (2009) as well, p. 43

that ICT can be viewed as a power tool in fostering broader accountability where public sector workers have to explain their actions. This means that these two factors – accountability and transparency - may be linked with each other, but they can have an effect to the corruption levels just by themselves likewise. According to Smith et al. (2010: 3) more open information does not have to necessarily mean increase in accountability. Thus the author of this thesis finds that in some ways the factors of transparency and accountability affect each other, but they can have significant impact to the corruption levels individually as well, therefore looking those two factors separately is more reasonable.

## 4. Bridging the gap between public workers and citizens

Public accountability is important to bridge the gap between public workers and citizens, thus it builds a culture of legality and trust between the both of them (Aucoin & Heintzman 2000: 49). This helps to close the gap between public employees and citizens, and help to overcome the mistrust between them – the more accountable the public workers are, the better trust there can be. E-government helps to monitor and control government employees, through which they can be held accountable for corrupt behaviour more easily. Welch et al. (2005: 376-377) also argue that improvement in closing the gap between the public and the government employees and trust can come through the development of new technologies and initiatives like e-government by making things more accountable through the increase of transparency and discretionary power of civil servants. Although the trust of citizens is linked with transparency and accountability, it can have a positive effect on the reduction of corruption separately as well. Thus, the introduction and development of e-government initiatives may engender greater trust - if these initiatives are greatly available and effective, citizens can feel closer to their governments.

# 4.1    Summarizing the factors

As brought out above, these four factors are based on the previous researches done in the field, where the authors have suggested that these factors have an effect on the levels of corruption after the introduction and development of e-government. The factors are following:

1. Disappearance of the "middle-man", thus taking away the possibility of being corrupted.
2. Transparency. This should give more relevant and accessible information, therefore leaving little opportunities to be corrupted.
3. Increase in accountability, thus making tracking and monitoring of corrupt behaviours easier.
4. Bridging the gap between public workers and citizens. Introducing new initiatives through e-government can build greater trust amongst the people.

Also there is a factor before them, namely the usage of internet and computers in a state. This shows how big percentage of the population can and are using internet. It is important to know that because the more people are using the internet and computers, the more they are willing to use specific e-government initiatives also, thus there is a greater chance that above-mentioned four factors can have an effect on the levels of corruption.

The author of this thesis assumes that these four factors can reduce the corruption after the introduction and development of e-government initiatives in a given state. Although they are more or less linked with each other, they can reduce corruption in a separate way also. It is important to know, that these factors can be the main cause for the reduction of corruption, when thinking about the relation between e-government and corruption. That could be seen through time, whether there has been a change in a corruption level after the introduction and development of e-government initiatives. Of course one factor may have stronger influence than the other. Furthermore, taking these factors as a ground rule, we will be able to make conclusions, whether these factors are helping out in the reduction of corruption after the introduction and development of e-government initiatives.

# 5 Methodology

Choosing the right method for the empirical part of a study is an important task. This thesis aims to study one particular phenomenon in the field of e-government and corruption, thus the best method for this seems to be a *case study*. According to Gomm et al. (2009: 23), a case study is usually a research of one or few cases in an in-depth way. This means, that the author takes a case and analyses it thoroughly in relation with the research question. The same has been pointed out by George & Bennett (2005: 5), where they mention that a case study is a detailed research of an aspect to test some explanations which might be generalizable. Likewise, Gerring (2007: 19) has pointed out that a: "case connotes a spatially delimited phenomenon (a unit) observed at a single point in time or over some period of time". As one of the main idea of this thesis is to look, whether the case (in this study: e-government in a country), has changed the corruption throughout the years, a case-study approach should provide the best outcomes.

One important advantage of a case study, is that it can closely explore the causal mechanisms. George & Bennett (2005: 21) mention that:

> *"Case studies examine the operation of causal mechanisms in individual cases in detail. Within a single case, we can look at a large number of intervening variables and inductively observe any unexpected aspects of the operation of a particular causal mechanism or help identify what conditions present in a case activate the causal mechanism."*

Through a case study method, the author can examine the relationship between e-government and corruption in a specific country, thus giving the opportunity to explore, whether and what kind of an effect the e-government can play in reducing the corruption. This will help the author to research and find the answer to the causal relationship of "why" e-government may lower the levels of corruption.

## 5.1 Strengths and weaknesses of case studies

Case studies have been taken into scientific use quite lately and more complete researches have been done with this method within last three decades (George & Bennett 2005: 5-6). All research methods have their own strengths and weaknesses, so does case study method. George & Bennett (2005: 19-22) bring out four strong factors, why case studies are good research tools: they have a strong potential to achieve conceptual validity, they foster new hypotheses, they are useful to examine

hypothesized role of causal mechanism and they are able to address causal complexities. This has been supported by Gerring (2007: 37-38) as well. As mentioned before, a case study is helpful in studying the causal relations between factors. This is important if we want to answer the research question of "why" e-government can decrease corruption in a state.

Although there are several strengths for conducting a case study, it also has some limitations. One critique can be, that a case study is vulnerable to "selection bias" (George & Bennett 2005: 22). This means that the selected variables may be self-taken, thus not giving the whole spectre of them. Another critique is, that a case study is not good in answering precisely the question of how much one variable can change the outcome (George & Bennett 2005: 25). Thus, a case study is better in answering just the question of how a variable is important or is it at all. One of the most important critique of a case study is related with the generalizability of the outcome. Gomm et al. (2009: 98) bring out that a case study method has been seriously criticised because of its lack of ability to generalize conclusions. Although, this is true, that the selected cases in a case study are not directly representing the diverse population, the method itself can in an indepth way *"develop cumulatively contingent generalizations that apply to well-defined types or subtypes of cases with a high degree of explanatory richness"* (George & Bennett 2005: 31). Thus it is possible to provide general conclusion to other cases also in some ways.

## 5.2    Selection of a case

The empirical analysis of this thesis is based on a single case study. The case that the author chose for this thesis is Estonia. The reason behind it is because within one and a half decade, Estonia has developed a well working and high-tech e-government system that can be analysed in relation with the reduction of corruption. This will give an insight if a well-functioning e-government system could decrease the corruption levels and in what ways. Thus the research question of the thesis will be narrowed down as:

*"Has the introduction and development of e-government in Estonia led to a lower levels of corruption? And Why?"*

Hence the hypothesis (H) of the thesis has been rephrased as well:

*H: "The introduction and development of e-government in Estonia has decreased corruption through greater transparency, accountability, disappearance of a "middle-man" and bridging the gap between public workers and citizens."*

The topic is fairly new, as the technology in this field has developed within past two decades. Most of the researches in the field of e-government have studied its implications and effects to state economy and the effectiveness and efficiency to

the bureaucratic system itself. Thus the socio-economic field of e-government, more precisely its effects on more transparent and accountable society and with it the decrease of corruption, has been so far researched mildly. Moreover, the reason behind why e-government can lower the levels of corruption, has been researched even less. Estonia introduced its first e-government initiative approximately 15 years ago, and has since then developed it continuously. This gives a great opportunity to analyse, whether the introduction and development of e-government in Estonia, have had some effect on the decrease of corruption and why. Also it gives an opportunity to see, whether the e-government initiatives can really lower the levels of corruption in a state.

Moreover, so far the main emphasis, why to develop e-government, has been because of its cost-efficiency and economic reasons. When promoting the e-government initiatives, it sometimes goes together with the reasons like "it can reduce corruption" etc., but it is never reasoned thoroughly, why it can do it. That is why it is really interesting to see if these initiatives actually can reduce corruption and why.

## 5.3    Material and operationalization

An important part of the research is knowing what kind of data to use and how to analyse it properly. To carry out this study, the author is using a single case-study approach, where a case selected is Estonia. The main focus of this thesis is focusing on the relationship between e-government and corruption and how and why these two relate to each other.

The theoretical part has laid down the factors that can decrease corruption through e-government. Thus the main aim of the thesis is to analyse whether these four factors have an effect on the corruption based on the selected case study. For evaluating transparency the Transparency International Organisation Corruption Perception Index of a state was used. The reason, why this index is being used, is that it is one of the few indexes that shows transparency of the public sector through longer period of time. Williams (2014: 6) explains, that Transparency International Corruption Perception Index is one of the best existing indicators for transparency, because of its breath of transparency issues it covers. Hawthorne (2013: 25) has also stated, that the more people feel that their leader are being corrupt, the less public sector itself is transparent, meaning that if the perceived corruption is lower, the transparency of public sector is better. As Transparency International index is the best one for this thesis, because of the needed period of time and countries it includes, the author chose this for measuring transparency in Estonia. The lower the perceived corruption is, the higher the transparency, thus the better ranking for a country also. For accountability, the Worldwide Government Indicator (WGI) project were used, where a specific indicator shows voice and accountability in countries all over the world. Country`s citizens ability to participate in selection of their governments, freedom of expression, freedom of association and free media go under this dimension (Worldwide Governance Indicator). As all these mean also

how available it is to monitor and replace their government, this indicator seems to be the best for this study. Also the Worldwide Governance Indicator`s voice and accountability dimension is a suitable data due to its period it covers. Trust in government was measured with the data from the Eurobarometer surveys that are being conducted throughout the years by European Commission. Standard Eurobarometer surveys cover wide range of areas, including European Union countries trust in governments. Analysing the factor of bridging the gap between civil servants and public through that seems to be the best chance regarding to the period of time it covers also. Disappearance of the "middle-man" was measured by looking the usage of internet for interactions with public authorities in Estonia. This factor was analysed with the data taken from the Estonian Statistics Office, which conducts these figures every year since 2005. By looking these numbers, the author will be able to see how many people are using computers and internet for communication with public authorities, thus leaving out the "middle-man". Corruption was evaluated based on the studies by the Ministry of Justice in Estonia, to see whether and what kind of changes over the years there have been in this field. Furthermore, the author is analysing which of the studied factors seems to be most effective in decreasing the level of corruption. For that, the factors are going to be analysed over time to see, which one of them seems to have most effect on the corruption in Estonia.

To show the introduction and development of e-government in Estonia over time, various publications from Department of State Information System, Information System Authority and elsewhere has been used. Likewise, some European Commission papers and Eurostat and Eurobarometer researches have been used, to illustrate the connection between e-government and corruption. This material is chosen, because it will help to evaluate whether there has been any change to the reduction of corruption due to e-governments initiatives and to solve the question why there has been this. Of course, like in every social science research, there can be problems with the deviation of the material used. The main problem in this study is that there can be also some change in the corruption levels because of a strong traditional factor, especially some changes in laws related with corruption. Thus, the author brings out, if there has been some changes in laws and whether these have had an effect to the levels of corruption.

Following analytical steps will be conducted in the phrames of this thesis. First, the author is going to look closely and thoroughly the introduction and development of e-government in Estonia. This will help to settle the timing, when the e-government initiatives have started and developed. After that it is possible to proceed to the next part, which is looking deeper into the causal relationship between the e-government and corruption. That will help to analyse the factors – which were brought out in the theoretical part - and to see if these factors have changed over the time also. Through that, it is possible to identify and evaluate, whether these factors can be the reason why e-government leads to lower levels of corruption. The thesis is backed up with the corruption data and analysing this will help to see, whether the introduction and development of e-government in Estonia seems to have an effect on corruption. Moreover analysing, whether some factors are changing more with the introduction and development of e-government will

help to identify if some of them are more effective than the others. In the end, it should be possible to make generalizations, whether an e-government is a useful tool against corruption and why.

# 6 E-government in Estonia

## 6.1 Background

Estonian e-success started in the end of 1990s. First important act that was adopted related with the cyber-issues, was in 1997 and was called "Databases Act" (RT I 1997, 28, 423). This regulated one of the most important areas of Estonian information systems – notably collecting, using and processing the information through the system (Department of State Information Systems 1). The act itself was a breakpoint in developing a strong and reliable information society legislation. As the legislation was there almost, a base for the e-society and e-government had to be created also. A strong platform for Estonian information technology was created in 2000, thus giving an opportunity to move towards effective e-government system (Department of State Information Systems 2). A state's information system is something that consists of databases and information systems, which provide services (Information System Authority 1). In Estonia, this consists of Administrative System of States Information System, X-road, Address Data System, IT Baseline Security System, Classification System, Geodetic System and systems that provide services like State Portal (Eesti.ee) and Document Exchange Centre (Information System Authority 2). All these systems are needed to provide a functioning e-government for the citizens. With the help of that, in 2014 Estonia ranked on the $15^{th}$ place out of 193 countries according to e-governance implementation (United Nations 2014: 15).

One of the main backbones for e-government in Estonia is X-road. This platform was put to work in 2001 (Department of State Information Systems 3). Thus it can be said, that with this, the introduction of e-government started. Also in 2001, Public Information Act entered into force, thus saying that every person has the right to access and use the information that is in public use and has the opportunity to monitor and control all the public duties (Department of State Information Systems 4). This was especially important for the public sector, thus making the government more accountable. Since then e-government initiatives have been developed broadly. Together with the Public Information Act, another important law entered into force in 2000 – notably Digital Signature Act (RT I 2000, 26, 150). This gave the digital signature the same power as the handwritten signature. It made much easier to use different e-government initiatives and also in more secure way, thus increasing trust between government and citizens.

Since the introduction of the platform for e-government, the development has been rapid throughout the years. Although the first introduction of e-government was in 2001, the development of it was on its peak in the middle of 2000`s. It is still

an ongoing process, as the technology is improving all the time and with it, the services for citizens. There are a lot of different e-services, which can be used, like e-tax system, e-parliament, e-banking, i-voting, e-health, e-school, e-police, e-cabinet etc. They have been developed inside e-government over the years, thus making the system broader and more effective. E-tax system was launched already in 2000, first digital signature was given in 2002, likewise, i-voting was introduced in 2005, e-police in 2007, e-health system in 2008 and e-prescription in 2010 (Information System Authority 3). For example, in 2015 there are 815 e-services, which a citizen can use through the State Portal, most of them going under the aforementioned broader areas (State Portal 1). To access all these public e-services, Estonian citizens have government issued ID card, which holds their personal information, and through that, they can authenticate and authorize themselves for the e-services (Kalvet 2007: 15). This system has enormous importance for some unique e-services, for example, i-voting, which is one-of-a-kind in the world. This means, that the citizens have the opportunity to vote in the national, local, and European Union elections via internet. The usage of i-voting has increased since its implementation to its highest numbers in 2015, during national elections (Vabariigi valimisomisjon 1). Table 1 introduces the numbers of i-voters since 2005.

| | Local Elections 2005 | Parlia-mentary Elections 2007 | European Parlia-ment Elections 2009 | Local Elections 2009 | Parlia-mentary Elections 2011 | Local elections 2013 | European Parlia-mentary Elections 2014 | Parlia-mentary Elections 2015 |
|---|---|---|---|---|---|---|---|---|
| I-votes counted | 9287 | 30 243 | 58 614 | 104 313 | 140 764 | 133 662 | 103 105 | 176 329 |
| I-voters among participating voters | 1,90% | 5,50% | 14,70% | 15,80% | 24,30% | 21,20% | 31,30% | 30,50% |

Table 1. Number and percentage of i-votes in parliamentary, local and European Parliament elections in the years 2005-2015 *Source: Vabariigi valimiskomisjon 1*

## X-Road

*"X-road project was launched by the Estonian Government in the 1990s to create a secure and standardized environment for interconnection or enabling data exchange between a multitude of different information systems"* (Cybernetica 1). This means that Estonian e-government is mostly based on this project, where civil servants, legal entities and civilians can use open databases as much as they have permission (Kalvet 2007: 15).
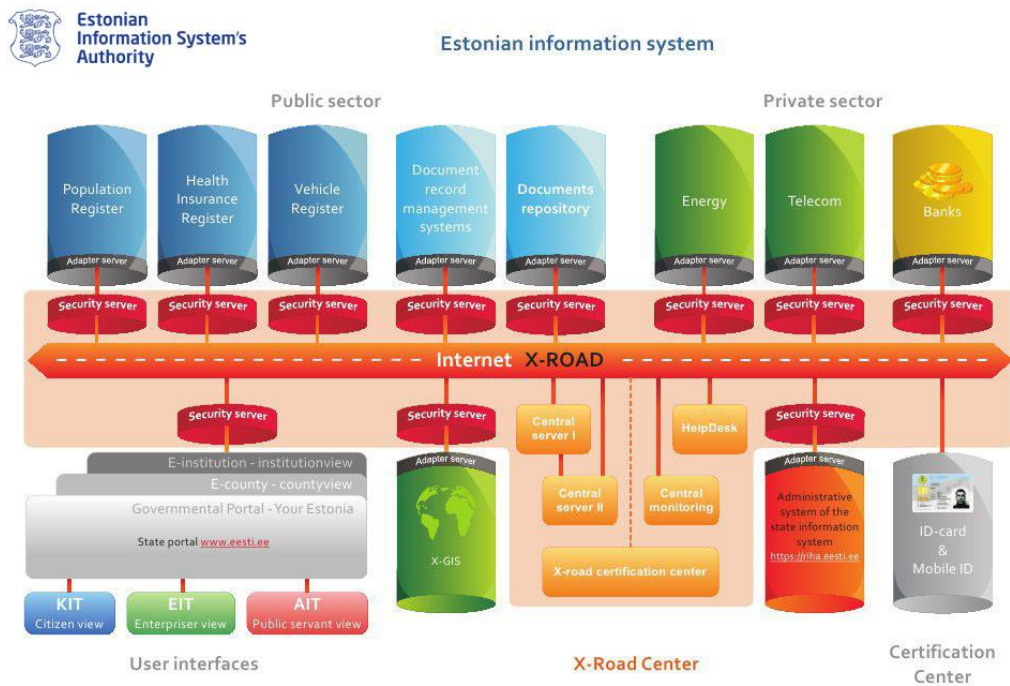
Figure 2. Estonian information system      *Source: Information System Authority 4*

X-road helps to communicate between different databases in a secure way, to make e-services more efficient and better. Likewise it helps people to communicate with their government, thus making it more transparent and accountable, as civilians can trace and monitor, what civil servants are doing. For the purpose of this thesis, the most important is the communication between different public sector entities, which can be seen in the left side of the Figure 1. X-road system follows the principles of security of the system, standardization, traceability and provability (Information System Authority 5). This makes the government more transparent, because every step can be controlled, and this leaves out the opportunity to be corrupt. What makes the system so transparent and easy, is that X-road does not have any central gateway or hub, but all organizations that are connected with it, can communicate with each other directly (Cybernetica 2). In that way, it is easy to track and monitor the movement and steps done by, for example, civil servants.

## Administrative System of States Information System (RIHA)

This is a system that is meant to administrate Estonian information system. It's a system, which categorizes all the data and processes it. According to the Estonian Information System Authority that administers it, RIHA makes all these e-government initiatives transparent and plans the management of state`s information (Information System Authority 6). RIHA provides its users an information about other information systems that make up Estonian Information System, as well as which kind of data is provided from these information systems, the people or organizations that are responsible of these information systems and on which legal

bases they operate (Information System Authority 7). Thus it all gives citizens the opportunity to see and follow, what is happening in public sector and who is doing what.

## IT Baseline Security System ISKE

A system, that is really important in building trust between citizens and its government, is of course the security system. Thus one of the important parts of Estonian information systems that deals with e-government, is IT baseline Security System ISKE. This system ensures sufficient security for the data, and dependent of the data, it is protected with three levels of security (Information System Authority 8). As the technology is all the time improving, this system needs to be up-to-date also. Thus one of the goals of ISKE is finding a balance between confidentiality, integrity and availability of data (Information System Authority 9). Most likely there will be more trust to the government's e-initiatives, if the public knows, that their information is secured and protected properly.

## State Portal

Important part of the e-government in Estonia lies within the systems that provide e-services for citizens. One of this, the main system, is called State Portal (Eesti.ee). It was entered into force in 2003, but its main purpose in the beginning was just giving out information (State Portal 2). Throughout the years, State Portal has been developed and renewed many times, making it better and more user-friendly to the public. Now, the portal provides information and e-services in most of the public sector fields to citizens. Thus, as people can now handle their business with government through internet, there is less need for paper-based processes. This lessens contacts between public officials and citizens, therefore taking away the possibilities to give any bribes to them or some other benefits.

## Document Exchange Centre (DEC)

The Document Exchange Centre was put into force in 2004. Estonian Information System Authority refer to it as an: *"information system providing a common central document exchange service for various document management systems (DMS) as well as other information systems that handle documents"* (Information System Authority 10). Working principle of this project is simple, as it means that a document is uploaded to the server for some government or local organization and then this organization downloads it (Information System Authority 11). The DEC makes sure that the document is being transferred to the recipient and it is verified. Furthermore, DEC has decreased the need for manual labour and it is more secure (Information System Authority 12). Thus DEC takes away the need for civil servants, who actually need to deal with these document, as the machine is doing everything by itself. This, again, gives lesser opportunities for civil servants to be corrupted.

## 6.2 Availability of e-government initiatives

Furthermore, to look closer if there has been any impact on corruption through e-government initiatives, the author of this thesis is taking a closer look how available and sophisticated e-government initiatives are in Estonia. Sophistication and availability of these e-government initiatives will give the author a chance to make better generalisations about the relationship between e-government and corruption. The more user-friendly and available these initiatives are, the higher is the e-government usage.

Taking a deeper look into how complicated and available e-services are helps the author to understand, whether people have the chance to use these initiatives. Likewise, how complex they are in overall is an important part, because if they are not user-friendly, then people do not tend to use them.

The sophistication level of online services has been marked by the European Union throughout the years. In this field, Estonia has been improving remarkably, but in past few years it has been progressing quite slowly.
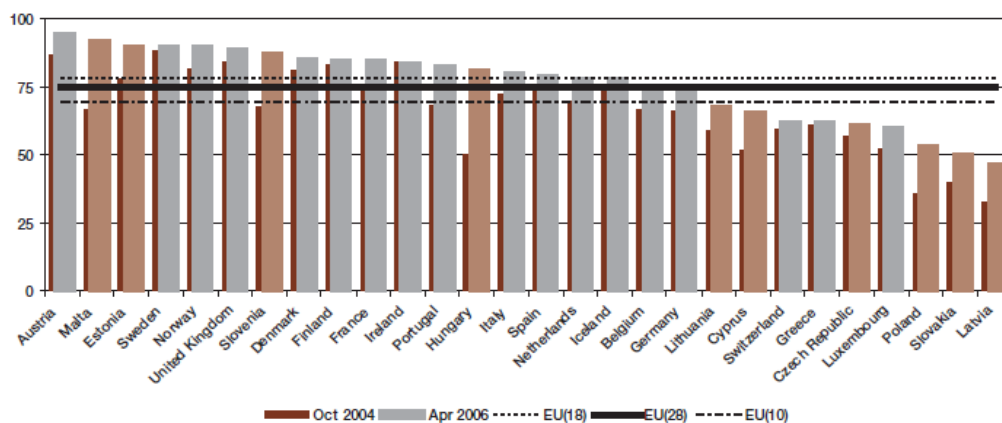


Figure 3. Sophistication of online public services in European Union in 2004 & 2006     *Source: Wauters & Colclough 2006: 8*

Figure 4 brings out that the sophistication level of online public services in 2004 were around 75% in Estonia, but in 2006 already 88%.
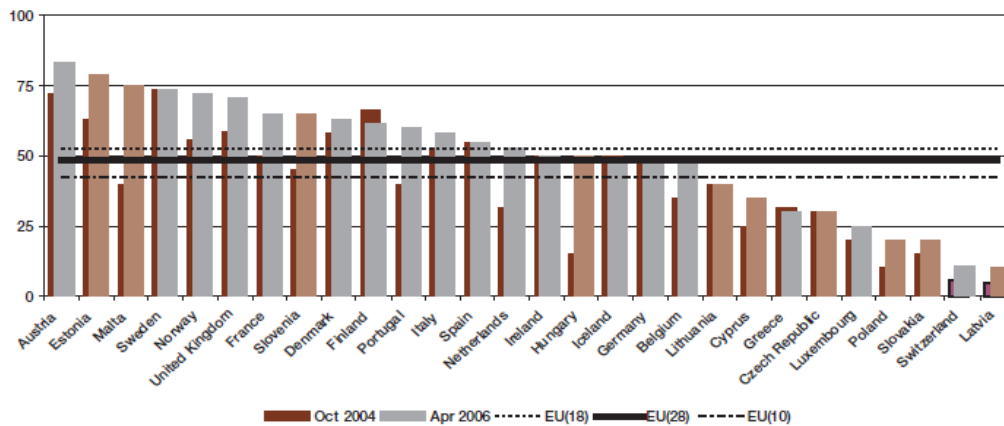
Figure 4. Availability of online public services in European Union in 2004 & 2006     *Source: Wauters & Colclough 2006: 9*

Figure 5 shows, that availability of public services in Estonia in 2004 were around 60%, whereas in 2006 already above 75%. Thus, more and more e-government initiatives and e-services are available in the internet, making the services, that before were paper-based, now electronically usable.
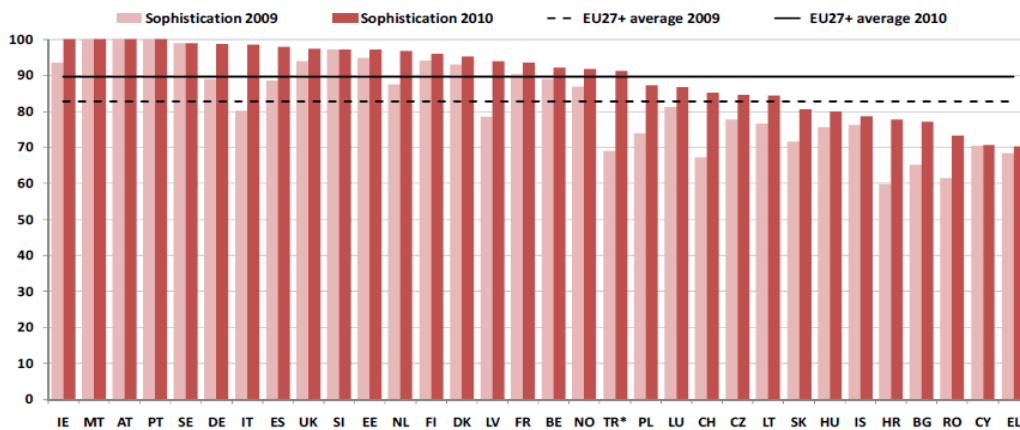


* Survey not implemented in 2009. The score of 2007 is used in the graph.

Figure 5. Sophistication of online public services in European Union in 2009 & 2010     *Source: European Commission 2010: 7*

From the Figure 6, we can see that Estonia has improved quite a lot in the sophistication level of online public services, reaching to 97% by the year 2010, but many other countries have also done that.
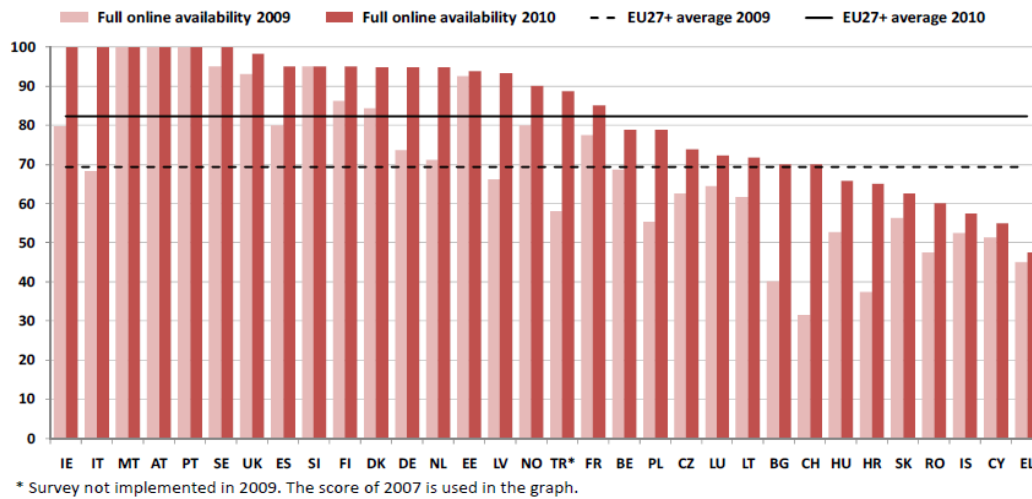
32

Figure 6. Availability of online public services in European Union in 2009 & 2010    *Source: European Commission 2010: 8*


In 2010, availability of online public services in Estonia increased to 93%. This makes the usability of services easier, because more services are accessible from the internet.

The author of this thesis concludes, that the usability and availability of different e-government initiatives in Estonia have increased a lot throughout the years, thus making it possible for people to engage in these initiatives.

# 7 Analytical chapter

The author constructed a theoretical framework about the factors, why e-government initiatives can reduce corruption in a state. Thus it is relevant now to look, whether these factors have changed during the introduction and development of e-government in Estonia. For this, different researches and statistics have been used and analysed. After analysing these factors and change in corruption level in Estonia, the author will be able to make conclusions, whether e-government initiatives have had any effect on the reduction of corruption, and why. First, these factors will be analysed more closely and this will be backed up with corruption levels in Estonia throughout time. The analysis is based on the years from 2004 until nowadays, because although the introduction of e-government initiatives was in 2001, the main development took place in the middle of 2000`s, thus this will give the author a better chance to make conclusions.

To start with, taking into account the fact that the usage of internet and computers have an important role in e-government initiatives, it is relevant to analyse how many people in Estonia are using internet and computers. E-government, together with its e-services, can have an effect only, if people have the opportunity to use them. The more people are using internet and computers and the more available these services are, the better the chance there is that people are willing to use e-government and that it can have an effect to corruption. Subsequently, the author is going to analyse the percentages of households having computers and internet connection at home and the usage of computer and internet in Estonia. In doing so, the data from Estonian Statistics office is going to be used.
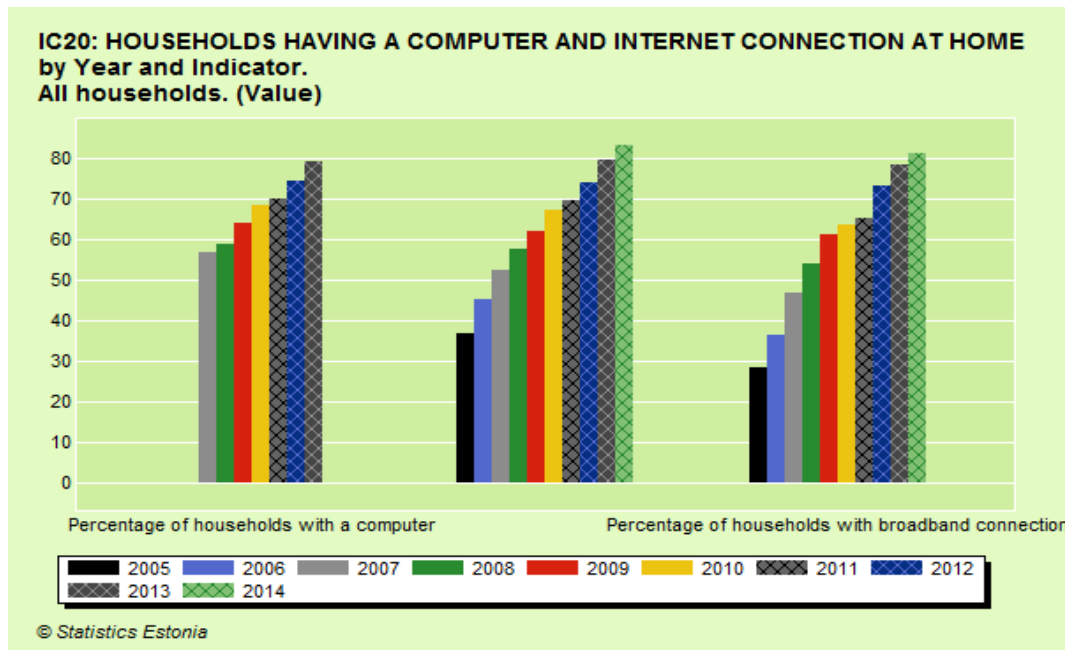
Figure 7. Percentages of households with computer, internet connection and broadband connection from 2005 to 2014 in Estonia (First bar chart households with a computer, second with internet connection, and third with broadband connection)     *Source: Estonian Statistics*

From Figure 1, it is visible, that the number of households that have a computer, internet connection or broadband connection has increased remarkably over the past 10 years. This makes the usage of e-government and its e-services also much easier. In 2007 only 57% of the households had a computer, but in 2013 already 79%. Households with internet connection in 2005 were around 37%, but in 2014, it had reached almost 83%. Broadband internet connection in 2005, were only in 29% of household, whereas in 2014, it had topped around 81%. Thus, we can say, that the number of people, who have computer and internet connection, is fairly high, and therefore they have the possibility to use e-government initiatives and e-services.

It is also relevant to take a closer look at how many people actually use these computers and internet. Through this, we can make an assumption, whether people like to use internet and computers overall.
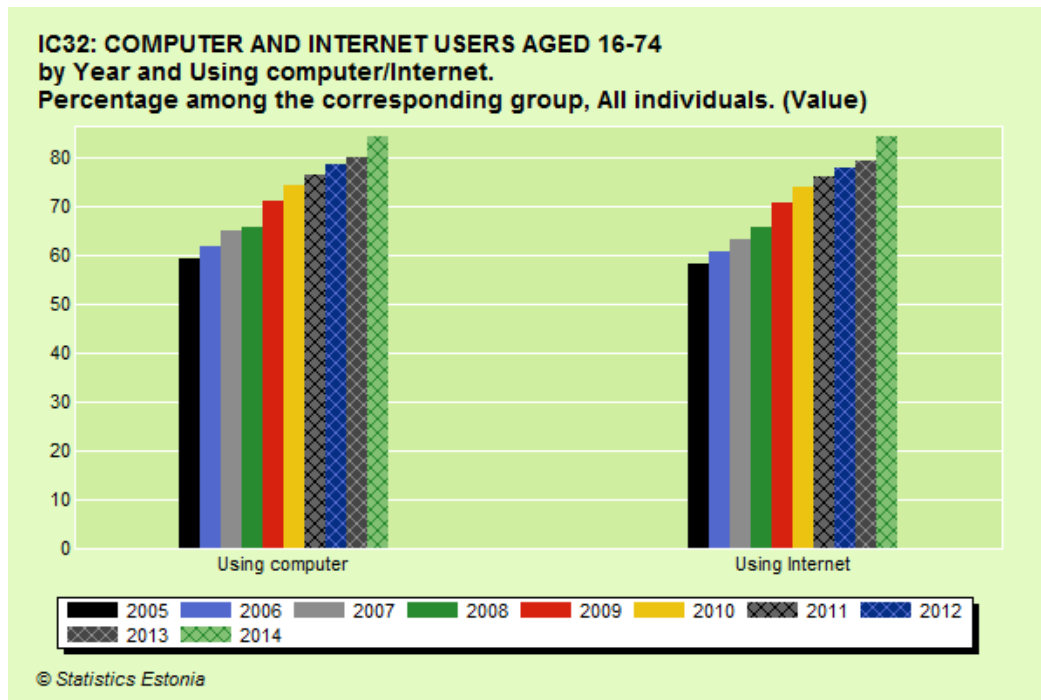
Figure 8. The percentage of computer and internet users aged 16-74 *Source: Estonian Statistics*

Figure 2 shows us, that people at the age 16-74, who actively use computer and internet, has increased a lot from 2005 to 2014. In 2005, only 59% of people used computer, but it has increased up to 84% in 2014. People, who used internet in 2005, were around 58%, whereas this percentage has increased to 84% in 2014. This proves, that people are using internet and computer actively, thus they should have no problem with using e-government initiatives.

Computer and internet usage in Estonia has increased over the years remarkably. Over 80% of people are using internet regularly. Likewise, over the years, the number of households having access to internet or computer has increased to 81%, making the usage of e-government initiatives possible and easy. As there are many people with the possibility to use internet and computers, the chance that e-government initiatives can have an effect to corruption should also rise significantly.

## 7.1     Disappearance of the "middle-man"

Now we can further elaborate on how many people are actually using e-services and e-government initiatives. This is relevant, because in that way, it is possible to derive from it the disappearance of the "middle-man". The more people using e-government initiatives and internet for communicating with the public authorities, the less they need to contact personally the "middle-man". Therefore the number of civil servants, who deal with paper-based processes, should be declining also. In order to analyse whether there has been any change of this factor, the author of this

thesis is using data from Eurostat on individuals' usage of internet for communication with public authorities.



**Individuals using the internet for interaction with public authorities**
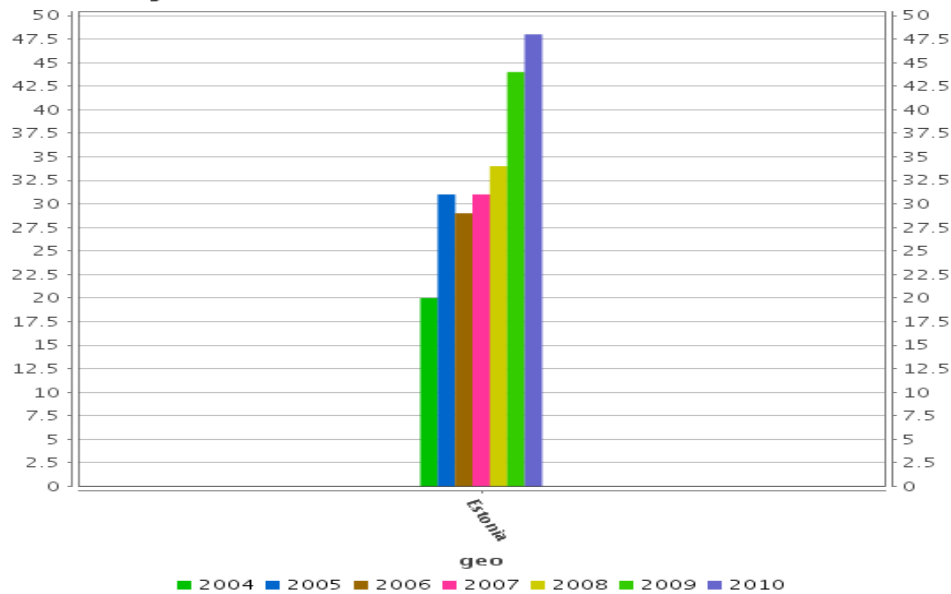% of individuals aged 16 to 74

Figure 9. Individuals using internet for interaction with public authorities in Estonia 2004-2010 *Source: Eurostat 1*



**Individuals using the internet for interaction with public authorities**
% of individuals aged 16 to 74
*Percentage of individuals*

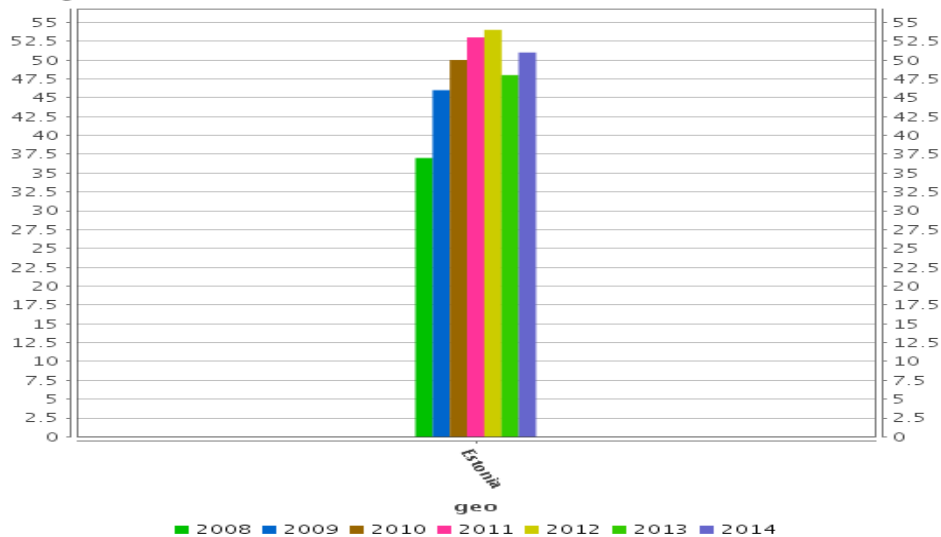Figure 10. Individuals using internet for interaction with public authorities in Estonia 2008-2014 *Source: Eurostat 2*

Figure 8 and 9 show the use of e-government services by individuals in Estonia between 2004 and 2014. The figures show, how often individuals have interacted with public authorities through internet, meaning that they have searched information from public websites, used official documents, and different available

e-services. In 2004, only about 20% of people used the possibility to interact with public authorities through e-government, but in 2014, the number was already 51%. Thus it seems that over half the population are using e-government services. This means that more people are interacting with their government directly through internet, thus leaving out the "middle-man". The difference in 2008-2010 numbers in both figures comes from slight variance in methodology, where figure 8 shows the usage of internet within the last 3 months and figure 9 within the last 12 months. Although there is slight variance in numbers, the author thinks that it is still possible to compare both of these.

## 7.2 Accountability

The more accountable a government is, the easier it is to track and monitor their corrupt behaviours. Usually if the government is highly accountable then there is less corruption.. Therefore, it is relevant to see if accountability of the government has increased along with the introduction and development of e-government.

To measure the accountability of Estonia, the author is using Worldwide Governance Indicator for voice and accountability by the World Bank Group.
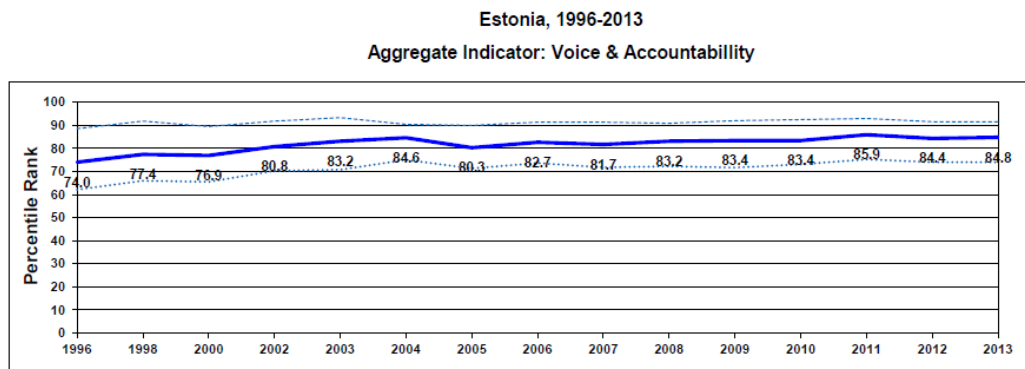


Figure 11. Voice and accountability of Estonian government, 1996-2013
*Source: Worldwide Governance Indicator*

Accountability has been increasing since 1996 in Estonia. In the beginning of 2000`s it had reached over 80%. Since then, the accountability has remained constant. In 2004 it was almost 85% and in 2013 the same. Thus, we can say that the accountability has not been increased together with the introduction and development of e-government initiatives that much. Although after the decrease in 2005, the growth in accountability has recovered, it still seems that from 2005 onwards, it has remained constant. However, it can be seen that the increase in accountability has remarkably risen between 2000 and 2002, when the first e-government initiatives were introduced. Nevertheless, it is hard to conclude, that this increase in accountability seemed to be because of introduction of e-government, since the growth started already before it.

## 7.3    Bridging the gap between civil servants and citizens

Trust between the government and citizens has always been an important part, when talking about corruption. If people tend to trust their government, they are more likely being honest and not trying to bribe civil servants, and vice-versa - civil servants do not want to be corrupt if they feel, that their government is honest and they can trust it. Thus, it is essential to look how people trust their government and to see what kind of changes there have been, especially related to e-government introduction and development in Estonia. To analyse the trust in government in Estonia, the author is using data from Eurobarometer Surveys, which is being conducted by European Commission.
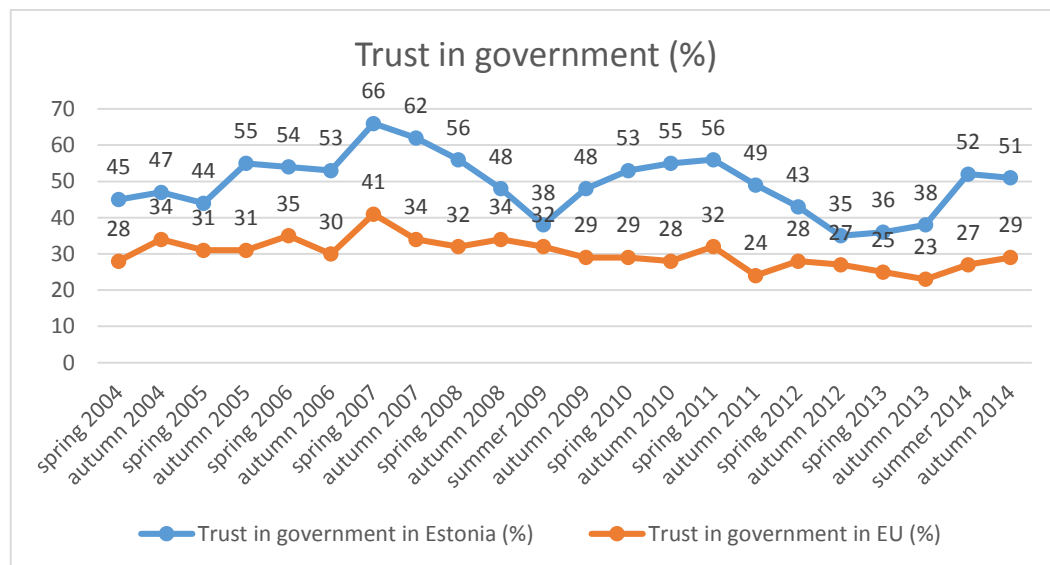


Figure 12. Trust in government in Estonia and EU average between 2004 & 2014
*Source: Eurobarometer surveys: Standard Eurobarometer 61-82*

It can be seen from figure 11 that trust in government in Estonia increased remarkably from 2004 until 2007. This was followed by a slight decrease in 2008 and 2009. After this, trust has increased and decreased over the time, but in 2014, it has risen above 50% again. It can be seen, that throughout the development of e-government initiatives in Estonia, it is hard to say that it has increased trust between the government and citizens. During the introduction and first development steps in e-government, trust in government increased a lot, but many factors can have an effect to its decrease and increase. Although trust has increased and decreased over the years, it seems as if the gap between civil servants and citizens has been narrowed and people tended to trust their government more, when e-government initiatives were developed in Estonia.

## 7.4    Transparency

E-government provides a possibility to make governments more transparent (Von Haldenwang: 2004). It is said, that increase in transparency in public sector can lower the levels of corruption, because the more open the governments are, the less there is a possibility to be corrupted. To see, if there has been a change in a transparency in public sector in Estonia, the author is using Transparency International Organisation Corruption Perception Index.
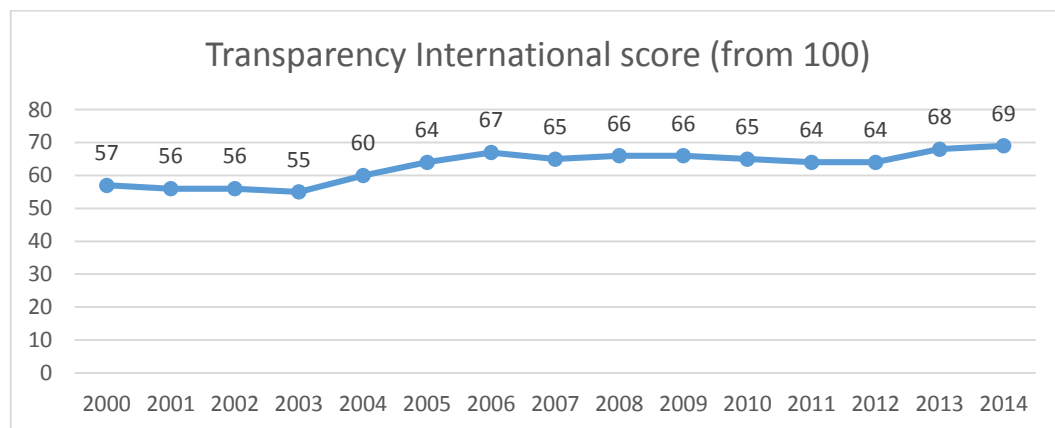


Figure 13. Transparency International Corruption Perception Index from 2000 until 2014, Estonia    *Source: Transparency International: Corruption Perception Index 2000-2014*

As can be seen from figure 12, transparency has increased over the years in Estonia. The strongest rise was between 2003 and 2006. Although the score has had some minor decrease after that, it has started increasing again within past two years. Transparency in Estonia has been getting higher throughout the times, when the e-government was introduced and developed. Thus there is definitely some link between these two. E-government initiatives provide better ways to access information, thus making that information more open. In that way, the government openness    improves,    and    it    can    be    seen    from    the    figure    12 likewise.

## 7.5    Corruption in Estonia

Corruption is everywhere - in a small or a big way. It can be in the form of bribery, nepotism, favoritism, fraud, extortion etc. Like stated before, it is a crime. Some people will always see a chance to benefit more when they are corrupt and unfortunately, this happens in public sector likewise. Moreover, corruption in public sector decreases trust in government. As in every country, corruption is a

problem in Estonia also. Every year some corruption cases are being discovered and brought to courts.

Like it was said before at the beginning, the author is looking public sector corruption in a broader way. This includes both bureaucratic corruption and political corruption. The data about corruption in Estonia right now is from 2002, because Penal Code, which includes paragraphs about corruption, came into force then (RT I 2001, 61, 364). Before that, criminal code was adjusted for corruption cases, and those are not comparable, because of their different composition. Thus the first years of corruption cases under investigation come from 2003 until 2014. Also before taking a closer look of the corruption statistics, it has to be mentioned, that the Penal code in Estonia was amended after 2007. The new Penal Code repealed two types of offences, namely misuse of official position and negligence related to office, and some new offences were introduced, like embezzlement and fraud committed by an official (Sööt & Klopets 2013: 84). Although, it has changed the number of corruption cases discovered (under the composition of corruption by law), the reason behind the change was the vagueness of the misuse of official position and that it was not clear what was meant under it (Sööt & Klopets 2013: 84).
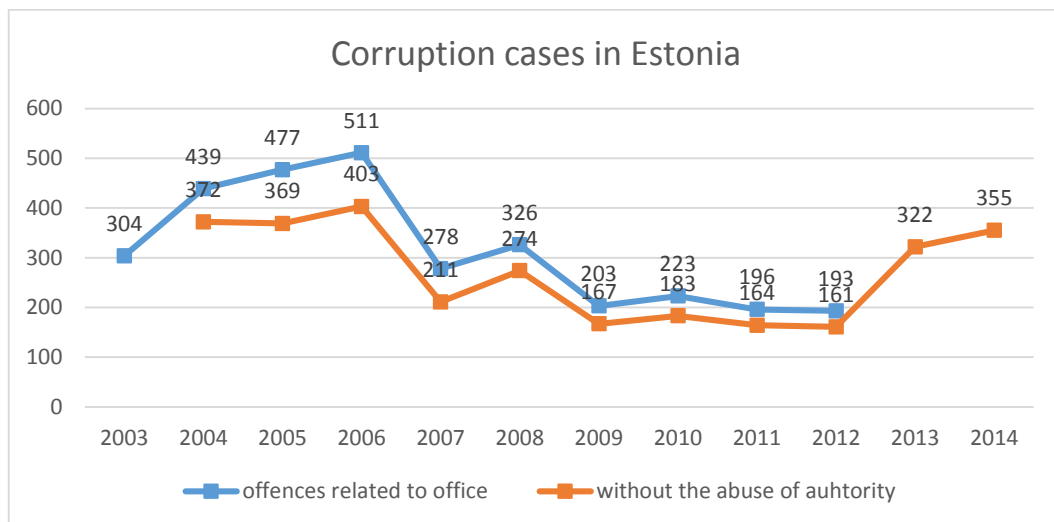


Figure 14. Corruption cases in Estonia 2003-2014 *Source: Ministry of Justice: Estonian Corruption Statistics 2006-2014*

As it can be seen from the figure 13, bigger decrease in corruption cases were after 2006. The main reason behind that can be the change in Penal code in 2007. Because of that, many cases that went under corruption before, were not included and there were not as many offences against the new paragraphs as there were against the old ones. Although the amendments made in Penal Code had a significant effect on the decrease in corruption cases between 2006 and 2007, there can be another reasons also. Likewise, it can be said that throughout the time, the numbers of registered corruption cases have declined in a minor way. Figure 13 shows that the number of corruption cases has increased a lot in 2013 and 2014. Actually in 2013, there were 113 unique cases of corruption, and without recurring

crimes, there would have been registered 163 cases (Sööt 2014: 46). The same goes with 2014, where most of the corruption cases that were registered, were recurring, thus meaning that the actual number of criminal cases, that were opened because of the crime, was decreasing compared to previous year (Kruusmaa & Klopets 2015: 62). Moreover, the registered corruption cases have had a minor decrease over the years, although the decrease is not very big one.

The decrease in registered corruption cases has been a minor one. Taking into account, that the four factors mentioned before, have increased over these years, it seems that e-government may have an effect on the decrease of corruption. At the same time, e-government initiatives can help to detect corrupt behaviours easier, thus meaning that the registered corruption cases can increase or stay the same with previous years likewise.

## 7.6    Analysis of the factors

The thesis analysed the changes inside the four factors throughout time when e-government was introduced and developed in Estonia. Like stated previously, there have been changes in transparency, accountability, disappearance of a "middle-man" and bridging the gap between civil servants and the public. To look closer, whether some factor seems to have more effect to the corruption than the others, the author tries to look the factors together.

First, it is important to know, whether people like to use e-government initiatives at all, thus looking closer, how many people have the possibility to use internet and public e-services is a relevant part. It could be seen, that starting from 2004, there has been tremendous increase in the possibility to use internet and computers in Estonia. Likewise more than 85% of the people of aged 16-74 in Estonia are using internet and computers. This shows, that if people want to use e-government initiatives, they have the possibility to do that.

One of the factors that can lower the levels of corruption through e-government initiatives was disappearance of the "middle-man". Mahmood (2004: 352) has stated it also by saying that a proper e-government initiative allows citizens to communicate with the government directly via internet, thus taking away the so-called "middle-man". This eliminates the person, who could be corrupt. Therefore it takes away the possibility for the civil servant or the person who is using the service to be corrupted.  It could be seen, that over the years, there has been a tremendous increase in the usage of internet to interact with public authorities. This means, that more people are using their opportunity to exploit e-government initiatives. Thus, more and more communication goes along with computers, and there is not that many face-to-face contacts anymore. This decreases the contacts with the "middle-men" also. Since 2004, when e-government initiatives were developed in Estonia, the usage of internet for the interaction with public authorities has increased over 30%. The increase from 2004 to 2005 was already a huge one and it has increased since then smoothly. The main development of e-government initiatives was on that period as well. Although the increase in usage of internet for

interaction with public authorities has increased greatly, the corruption cases on that period have not decreased that much. They have increased a little until 2006 and then there was a decrease. Since 2007, cases of corruption in Estonia have decreased in a slower rate. However they have still shown decline, therefore it seems as if the disappearance of a "middle-man" could have a strong effect to the corruption in Estonia.

Another factor that can lower the levels of corruption is accountability. According to Smith et al (2010: 3), the introduction of Information and Communication Technologies in public sector can increase accountability, giving the nature of centralization of e-governments. Through better accountability, it is easier to monitor and track people, who make decisions in public sectors, thus, for example, it is harder for them to be corrupt. There has not been any remarkable increase in accountability in Estonia throughout time. Although there was a growth in accountability between 2000 and 2004, when the introduction of e-government in Estonia took place, the overall accountability has remained steady. Taking into account, that increase in accountability started already before 2000, it seems that the growth might have been affected by something other. As the development of e-government in Estonia was on its way in the middle of 2000s, the accountability has not grown since then, but has been recovering its former height.

Third factor that was monitored is bridging the gap between civil servants and public itself. It means that the trust increases between public sector workers and citizens, thus leading to a reduction in corruption. Bannister & Connolly (2011: 141) have stated, that introduction of e-government initiatives can lead to a greater trust among citizens and government. Thus, properly working e-government initiatives are boosting up satisfaction of the population with their government and this will bring them closer to each other e. g increasing trust between them. Trust in government in Estonia has been increased remarkably in 2004-2007, meaning that when the development of e-government initiatives were on their rush, the citizens felt closer to their government. Although, the trust has increased and decreased over time since 2008, it seems that when the trust was on its growth, registered corruption cases in Estonia decreased. Still, increase in trust between government and citizen's takes time. When e-government initiatives were developed in Estonia, trust was only increasing a little. This is logical, because bridging gap between civil servants and people itself is a time-consuming task.

The last main factor that can reduce corruption through e-government initiatives is transparency. If the information about what the public sector is doing, is more open, then there is a better chance that corruption can decrease. Government openness is important. Through that people have opportunity to seek information and can feel that the public sector is not trying to hide something. Likewise, according to Grimmelikhuijsen (2012: 296), ICT developments in public sector lead to a better way to information storage, thus making governments more transparent. Through more available information, corruption can be ideally reduced, because the public can manage more data about the activities of the government. Transparency in Estonia has increased over the years in a modest pace. Notable increase was from 2003 to 2006 when e-government initiatives were developed. It seems that as transparency started increasing, corruption levels decreased a little in Estonia also

and since then, they have shown a minor decrease. Although, increase in transparency has not shown a quick growth, it seems to be an effective factor to the decrease of corruption.

Taking all these factors together, it seems as if the most instant effect on the decrease of corruption after the introduction and development of e-government initiatives in Estonia had to the disappearance of a "middle-man" factor. After developing e-government, the usage of internet for interactions with public authority grew strongly, thus it leading to some decrease in corruption. After the introduction and development of e-government initiatives in Estonia, it seems that transparency of public sector was increasing also. Increase in this factors seems to be in a linear way. After the increase in transparency, it seems that corruption has decreased in a minor way also, thus meaning that it can have an effect to it likewise. It also seems that, after the increase in that factors it takes a little more time for it to be effective than the previous factor. Bridging the gap between the civil servants and public itself is a relevant factor likewise. Moreover, trust in government in Estonia increased during times when e-government was thoroughly developed and it seemed when trust increased, the registered corruption cases started to decrease also in Estonia. However, it looks like that increase in trust is a slow progress, when comparing to the other factors, and appears to increase in a slower rate. This does not mean, that it is not as important factor as the others. Definitely it can have an effect on the reduction of corruption after the introduction and development of e-government. The same goes with the fourth factor, which was accountability. Although, accountability in Estonia increased between 2000 and 2004, it started growing already earlier. Therefore, it is hard to say, that the introduction of e-government initiatives in 2001 could have had an effect to its increase. Accountability has remained more constant over the years when the development of e-government initiatives took place, thus it seems as if these initiatives did not have that much of an effect to the factor.

# 8    Conclusion

The aim of this thesis was to find out, whether introduction and development of e-government initiatives in a state can lower the levels of corruption and why. The main reason behind that was to attain a better understanding about the relationship of e-government and corruption. In order to answer the question why e-government can decrease corruption in a state, it was necessary to analyse the factors through which e-government can have an effect to corruption. A case study of Estonia was chosen to help answering the thesis research question.

One of the main priorities of the new European Commission is to establish an interconnected Digital Single Market, under which goes the development of e-governments in its member countries. The main purpose of introduction and development of e-government in a state has always been its cost-efficient benefits. Although this area has been research many times, there has been a fewer researches in the field of e-government and its effects to corruption. As many states in the world are reforming their public administrations by digitalizing them, it is interesting to study, why e-government can lower the levels of corruption. However, e-government and corruption are concepts that are hard to define, thus making the researches in this field a complex ones.

There has been some researches in the past that have brought out factors why e-government can decrease corruption in a state. In a broad way, there are 4 main factors that are mentioned in the previous researches. All these factors are closely related with the development of e-government and corruption. These factors include increase in transparency of governments, greater accountability, disappearance of the "middle-man" and bridging the gap between public workers and citizens. As well, there is another important factor, namely the number of people having and using computers and internet in a state, which needs to be analysed before above-mentioned factors. If there is no possibility for people to use computers and internet or they are simply not doing it, it can be hard to explain whether these four factors can have an effect on corruption after the introduction and development of e-government.

To analyse the effect of these factors on corruption in a state, the thesis used a case study. A case selected for this thesis was Estonia, because in one and a half decade, Estonia has developed a high-tech e-government system. Estonia is one of the leading countries of developing new e-government initiatives, thus it gives a good chance to analyse the effect of these four factors on corruption after the introduction and development of e-government in Estonia. The availability and sophistication of e-government initiatives in Estonia has increased throughout the years when e-government has been developed. The more available and sophisticated e-government initiatives are, the better there is a chance, that people are willing to use them.

After analysing the four factors, notably transparency, accountability, disappearance of the "middle-man" and bridging the gap between public workers and citizens, it is possible now to conclude, whether these factors seems to have an effect on corruption. Transparency in Estonia has increased over the years mildly, and after the introduction and development of e-government initiatives, there seems to be a link. As well, when transparency has started to increase, it seems as if registered corruption cases have started to decrease. Disappearance of the "middle-man" was analysed through the usage of internet for the interaction with public authorities. It could be seen that after the development of e-government in Estonia, people started to use these initiatives to communicate with public authorities. Thus the more people used internet for communicating with public authorities, the less "middle-man" there was needed. Also after the increase in interaction with public authorities through internet, it seems that the corruption cases started to decrease. Bridging the gap between public workers and citizens can be looked through the trust in government. Although trust has been increased and decreased in Estonia over the years when e-government was introduced and developed, it seems that if the trust in government was increasing, registered corruption cases started to decrease likewise. Accountability has remained constant throughout the years when e-government initiatives were introduced and developed in Estonia. Although it was increasing in 2000, it had some decrease after that, and since then accountability`s growth has recovered throughout the years.

Looking all these factors together, it seems as if the most effect can have the disappearance of the "middle-man". The disappearance of the "middle-man" has increased rapidly after the introduction and development of e-government initiatives in Estonia, and it seems that after that, there has been decrease in corruption cases as well. Transparency has increased also, but the growth has been milder that the previous factor had. However, it seems that transparency had still a strong effect to corruption levels. Further, it seems as if increase in trust in governments is a slow progress, thus taking some time, before it can have an effect. Nevertheless, after the introduction and development of e-government initiatives in Estonia, trust in government has increased. As well, it seems that it has led to decrease in corruption cases. As accountability has remained constant throughout the years when e-government was introduced and developed in Estonia, it seems that e-government has not had that strong effect to this factors as much as it had to the previous ones. Overall, the introduction and development of e-government seems to have a reasonable effect to the factors, thus it also seems as if it has the possibility to reduce corruption within a state.

There are some limitations of this thesis. Even though these four factors seems to be the main ones, through which e-government can decrease corruption, there can also be some hidden factors, that can explain the relationship between e-government and corruption. As well, not all incidents of corruption can be registered, meaning there can be some deviations in these numbers.

Although the author of this thesis constructed a causal relationship between e-government and corruption based on the factors of why e-government can lower the levels of corruption, further research has to be done in this field. To achieve clearer picture in this field, these factors should be tested with some other countries

as well. Nevertheless, the author of this thesis finds, that there is definitely a link between the introduction and development of e-government and decrease in corruption through these factors. This has been analysed previously also. In addition, the author thinks, that overall it is possible to generalise the outcome of this thesis to other countries as well, although it should be done cautiously.

# 9    Executive Summary

## Research problem and aim

The usage of Information and Communication Technology (ICT) skills inside the public administration is more popular than ever. Using ICT skills in public administration is being called as e-government. E-government will able governments to provide more efficiently services to their citizens, thus its main aim is to make the public sector more cost-efficient. Although this is relevant, the development of e-government can also help out in another field – especially tackling corruption within a state. The relationship between e-government and corruption is researched mildly. Nevertheless, it is important to look, why e-government can help out in lowering the levels of corruption, thus the main purpose of this thesis is to find out, whether e-government can lower the levels of corruption and why. In doing so, it is possible to get a new perspective on why e-government can decrease corruption in a state.

There have been suggestions by previous researchers on why e-government can decrease corruption, however these factors have not been explicitly studied. Thus by looking these factors and analysing them after the introduction and development of an e-government in a state, it will allow the author to make clearer conclusions about the relationship of e-government and corruption.

## Theoretical framework

Theoretical framework of this thesis is built upon previous researches, which have brought out factors that can decrease corruption after the introduction and development of e-government in a state. The author of this thesis brought out four main factors, namely increase in transparency in government, greater accountability, disappearance of the "middle-man" and bridging the gap between public workers and citizens. According to the previous researches, these factors can help out in reducing corruption. Moreover, the availability of computers and internet and the usage of computers and internets is an important factor that needs to be considered, when thinking about the effects of e-government.

The percentage of people who are able to use and are using computers and internet is a relevant factor. If more people are willing to use computers, then there is also a bigger chance that an e-government initiatives can have an effect to abovementioned four factors.

Government transparency is as well important, because the more open the government, the bigger the chance of discovering corrupt behaviours is. Through greater transparency, public officials have to justify their actions, thus the detection of their misbehaviour is easier. Under transparency goes such attributes like accessibility, quality, reliability and relevance of the information. E-government can increase government openness by reducing the time the service is being delivered and the accuracy of information. This leaves less opportunities for public workers to be corrupted.

Greater accountability allows to monitor and control public workers more. When citizens can monitor the actions taken by public workers, it can lead to the decrease in corruption. Although accountability and transparency are interlinked with each other, they should be looked as a separate factors, because more open information does not have to necessarily mean the increase in accountability and vice-versa.

After the introduction and development of e-government in a state, there should be decrease in public servants who deal with paper-based processes. As the public services can be done through the internet, the need for these people disappears. Corruption can decrease in a state if we take away the possibility to be corrupt. This is one of the direct effects of e-government. Less face-to-face contacts between public workers and citizens can decreases the chances of civil servants being corrupted.

The fourth relevant factor is bridging the gap between public workers and citizens. This means basically increasing citizens trust in governments. The closer people and their government are the bigger the trust can be between them also, thus leading to the decrease in corruption. E-government can help out in closing the gap between citizens and public workers. Moreover, e-government initiatives can engender trust through more efficient and available public services.

## Methodology

The thesis is built upon a case study, where theoretical framework is being tested. The chosen case is Estonia, because within one and a half decade, this country has developed a strong and innovative e-government system. Analysing the introduction and development of e-government in Estonia will allow the author of this thesis to see whether there seems to be any effect from e-government initiatives to transparency, accountability, disappearance of the "middle-man" and bridging the gap between public workers and citizens. The author is analysing the introduction and development of e-government in Estonia. After that it is possible to examine, if there has been any change within the four factors during the time e-government initiatives have been developed in Estonia. This is all being backed up by registered corruption cases in Estonia throughout the years. Through that, we can identify and evaluate if these factors can be the reason, why e-government can lead to the reduction of corruption. Furthermore, through analysing whether some

factors are changing more, we may be able to evaluate if some of the factors are more effective than the others.

## Empirical material

The empirical material has been divided into two parts. First, it has been analysed the introduction and development of e-government in Estonia throughout the time. This will able to set the timeframe where the four factors should be evaluated. Second part consists of different statistics from Transparency International, World Bank, Eurostat, Eurobarometer surveys and Estonian Statistics, as well as Estonian Ministry of Justice. These statistics will give the author the data about transparency, accountability, disappearance of the "middle-man", bridging the gap between public workers and citizens and registered corruption cases. All that data has been analysed in relation with the introduction and development of e-government in Estonia throughout time.

## Conclusion

After analysing transparency, accountability, disappearance of the "middle-man" and bridging the gap between public workers and citizens, it seems as if the most effective of them is the third one. Following the introduction and development of e-government in Estonia, the usage of internet for communicating with public authorities has increased rapidly. This means that there has been a decrease in face-to-face contacts with public workers, thus leaving them out from the equation. After the decrease in face-to-face contacts, there seems to be a reduction of registered corruption cases as well. Another strong factor seems to be transparency. When the development of e-government initiatives in Estonia was on its peak, transparency increased also. After that, it seems as if corruption cases started to decrease. However, transparency was increasing in a slower pace than the previous factor, thus it seemed to have lesser effect. Third important factor that was increasing after the introduction and development of e-government in Estonia was trust in government. Following the increase in trust in government, it seems as if corruption cases started to decrease likewise. Still, increase in trust may take a long time, thus bridging the gap between public workers and citizens seems to have less effect than the previous ones. Accountability was increasing in 2000, but after that there was a drop in it. Since then, this factor has stayed mainly constant throughout time, when e-government initiatives were introduced and developed, and recovered its former height. It seems as if e-government has not had that strong effect on the accountability, as it seemed to have on the other factors.

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