The Analysis and Comparison of the Development of the Information Society in the Czech Republic and the EU

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Summary: The aim of the article is to provide an analysis and comparison of the development of the information society with the emphasis on e-Government in the Czech Republic which is compared with the data from the EU average and deduce the improvements of the position for the Czech Republic. In order to reach the aim, the information society indicators are used. These are provided by Joinup[1], which is a collaborative platform created by the European Commission in order to provide various services such as to help people who work for public administrations to share knowledge and experiences on e-Government.

Keywords: Czech Republic, average EU indicator, e-Government

1. Introduction

The development of e-Government consists of global analysis of the Information society indicators. The history of e-Government in each of the countries, Strategy and the process of its implementation, Legal framework, Main roles and the responsibilities of the e-Government actors, Main infrastructure components of the e-Government, e-Government services for citizens, e-Government services for businesses. For the purpose of this article the goal is to analyse and compare the development of the Information society indicators only and deduce the outcomes in comparison with the Czech Republic.

The Information society indicators, as used by Joinup, consist of two parts. The first part consists of the so called Generic indicators and the second part consists of the so called e-Government indicators.

The generic indicators are the following:

1. The percentage of households with Internet access
2. The percentage of enterprises with Internet access

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[1] For more detailed information on Joinup see https://joinup.ec.europa.eu/

3. The percentage of individuals using the internet at least once a week
4. The percentage of households with a broadband connection
5. The percentage of enterprises with a broadband connection
6. The percentage of individuals having purchased/ordered online in the last three months
7. The percentage of enterprises having received orders online within the previous year

The e-Government indicators are the following:

1. The percentage of individuals using the internet for interacting with the public authorities
2. The percentage of individuals using the internet for obtaining information from the public authorities
3. The percentage of individuals using the internet for downloading official forms from the public authorities
4. The percentage of individuals using the internet for sending completed forms to the public authorities

It needs to be said that the choice of these indicators, their interconnectivity or indeed their connection with the e-Government are not stated or anyhow explained in any of the annual reports that have been carried out by Joinup. It can only be assumed that the aim would be to reach as high a value of the indicators as possible and that would reach the goals defined by the e-Government society. It is not defined whether there is meant to be a connection between the generic indicators and the e-Government indicators. Again one can assume that the higher the level of Generic indicators the higher the level of the e-Government indicators for example the higher the level of the percentage of households with internet access the higher the percentage of individuals using the internet for interacting with public authorities and so on. In other words, one can assume that if people had better access to the internet they would use it for interaction with the e-Government authorities. Or is that so? Is there any connection between these indicators or what is the link between them? In other words, what does motivate individuals and businesses to actually use the benefit of e-Government if it is not the increase of their internet access and its usage?

At this stage it should be said that it was not managed to find any link between the Generic Indicators and the e-Government indicators. In other words, no matter how high the percentage of households with the Internet access and so on this does not lead to an increase in e-Government interaction. More on this will be discussed later on.

2. The Czech Republic in Comparison with the EU Average[2]

Based on the available data[3] the following can be deduced concerning the Information society indicators:

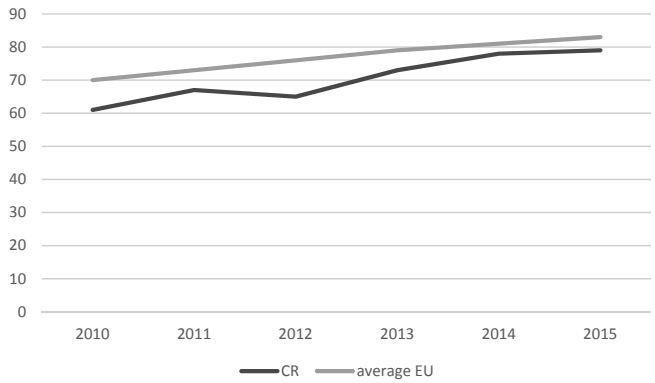
2.1. Generic Indicators

2.1.1. The percentage of households with Internet access

An assumption is drawn that the more households that have access to the internet the more likely they are to use it in order to support the process of the computerization of the public administration as well as to make the process of exchanging goods and services more efficient hence supporting both the efficiency of the public sector as well as the private one and fulfilling the aim of the e-Government. Then the goal seems to be to reach as high a percentage number as possible. The average EU in 2015 was 82% which we believe is pretty high (it was 70% in 2010) and though there has been a rise since 2010 with the original 61% while the average EU was 70%, the percentage as of 2015 was at 79% which is slightly less than the EU average of 82%.

The development of the indicator and its comparison with the EU average can be seen in the following graph:

Graph no. 1: Percentage of households with Internet access



Composed by the author with the data available from Eurostat

[2] The EU average is an average indicator of the following EU countries : Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, The Netherlands, Poland, Portugal, Romania, Slovakia,Slovenia, Spain, Sweden, United Kingdom

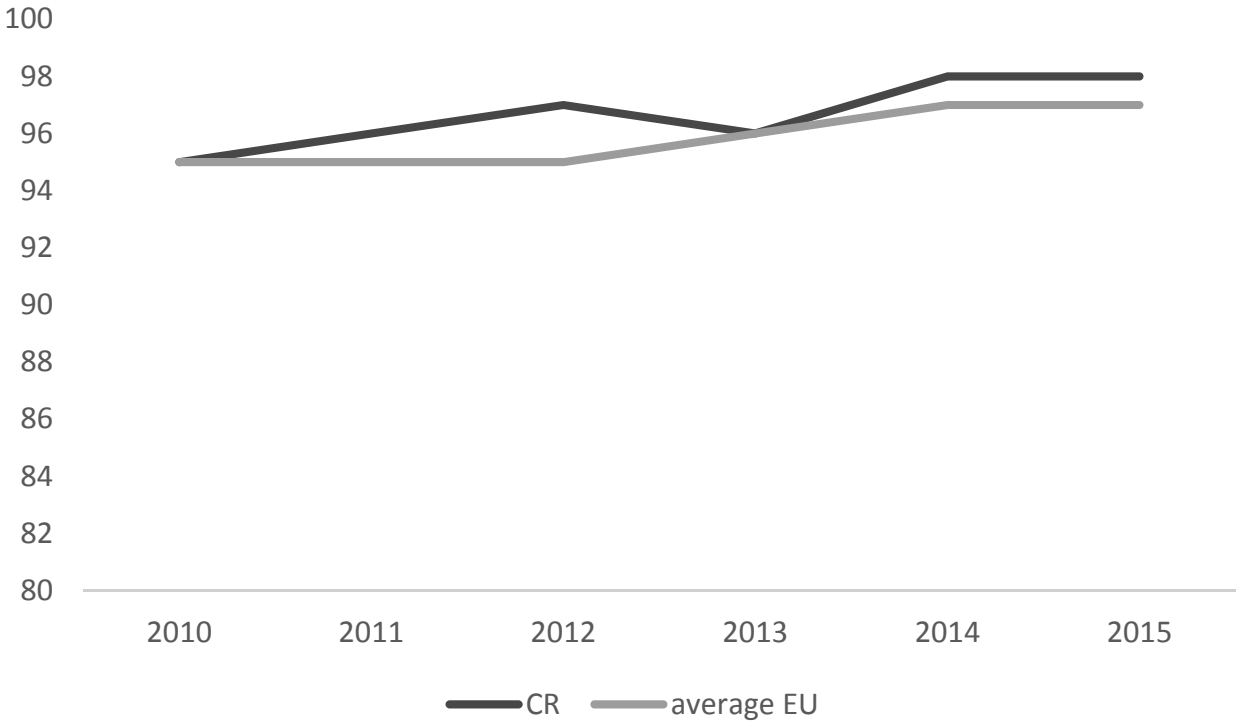
[3] For detailed information see BROŽKOVÁ, R. et al. *e-Government in the Czech Republic*. pp. 3–15.

2.1.2. The Percentage of Enterprises with Internet Access

An assumption is drawn that the more enterprises have access to the internet the more likely they are to use it in order to support the process of the computerization of the public administration as well as make the process of exchanging goods and services more efficient hence supporting both efficiency of the public sector as well as the private one thus supporting both the efficiency of the public sector as well as the private one and fulfilling the aim of the e-Government. In other words, the goal seems to be the same as in the case of the previous indicator which is to reach as high a percentage number as possible. The development in this indicator has led to a slight increase from the original 95% in 2010 to the current 98% which more or less copies the development of the EU average with the original 94% to the current 97% percentage rate as well. There does not seem to be much room for improvement though, in other words it seems to be as good as it is going to get.

The development of the indicators and its comparison can be seen in the following graph:

Graph no. 2: Percentage of enterprises with Internet access



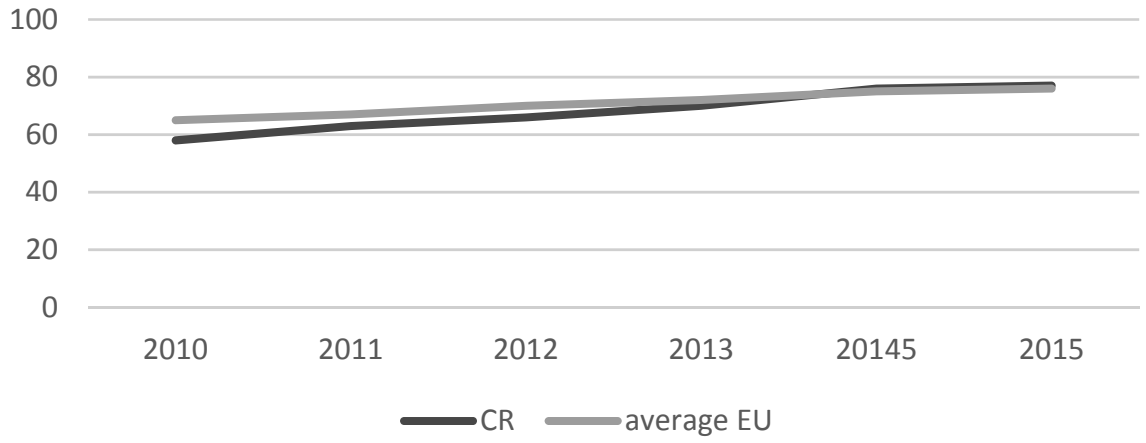
Composed by the author with the data available from Eurostat

2.1.3. The percentage of individuals using the internet at least once a week

An assumption is drawn that the more individuals that use the internet the more likely they are to support the process of the computerization of the public administration as well as make the process of exchanging goods and services more efficient hence supporting both the efficiency of the public sector as well as the private one hence supporting both the efficiency of the public sector as well as the private one and fulfilling the aim of the e-Government. In that case it seems to be the same as in the case of the previous indicators, which is to reach as high a percentage number as possible. The Czech Republic reached the EU average in 2015 with 77% and it has also shown a high rise in this indicator from the original 58% in 2010 with the EU average of 66% up to the above mentioned 77% for both in 2015.

The development of the indicators and its comparison can be seen in the following graph:

Graph no. 3: Percentage of individuals using the internet at least once a week



Composed by the author with the data available from Eurostat

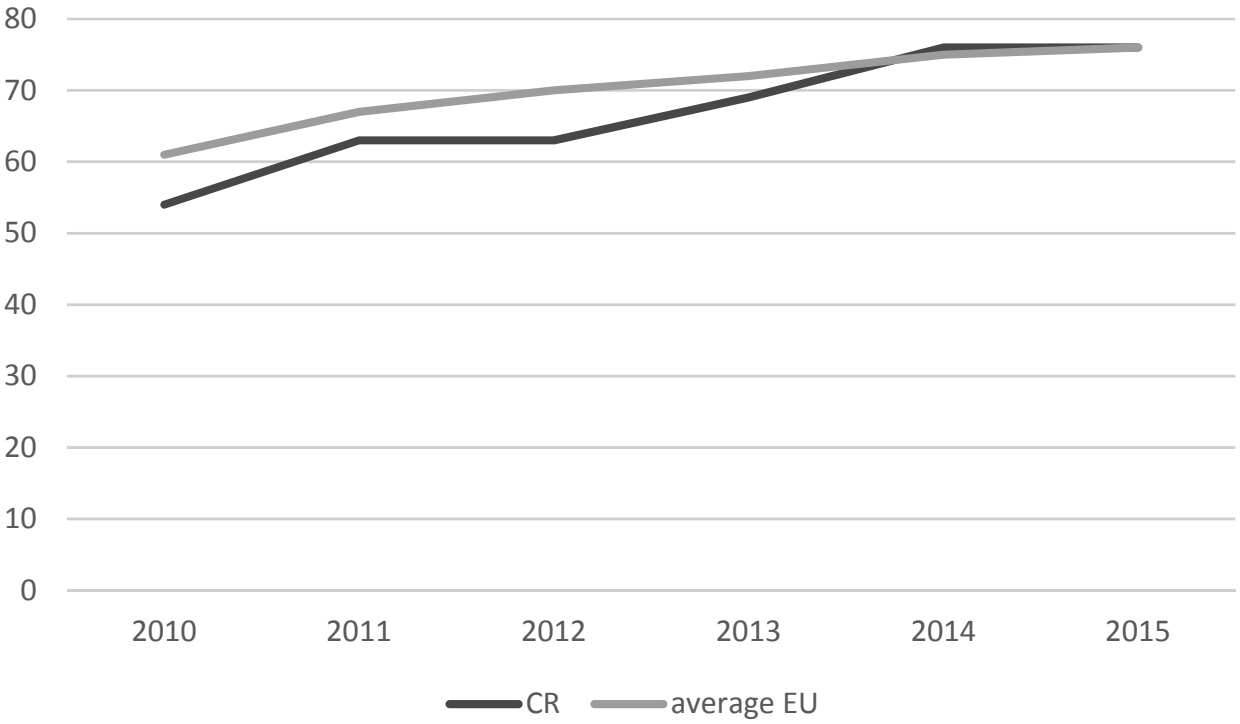
2.1.4. The Percentage of Households with a Broadband Connection

Like in the previous indicators it is assumed that the more individuals use the internet the more likely they are to support the process of the computerization of the public administration as well as make the process of exchanging goods and services more efficient and fulfilling the aim of the e-Government. Yet again the goal seems to be the same as in the case of the previous indicators, which is to reach as high a percentage number as possible though in this case we are looking at households rather than individuals. This indicator is still very slightly under

the EU average which was 79% with its current 76% in the Czech Republic but there have been indications of a rapid increase since 2010 from 54% while the EU average was 60% then.

The development of the indicators and its comparison can be seen in the following graph:

Graph no. 4: Percentage of households with a broadband connection



Composed by the author with the data available from Eurostat

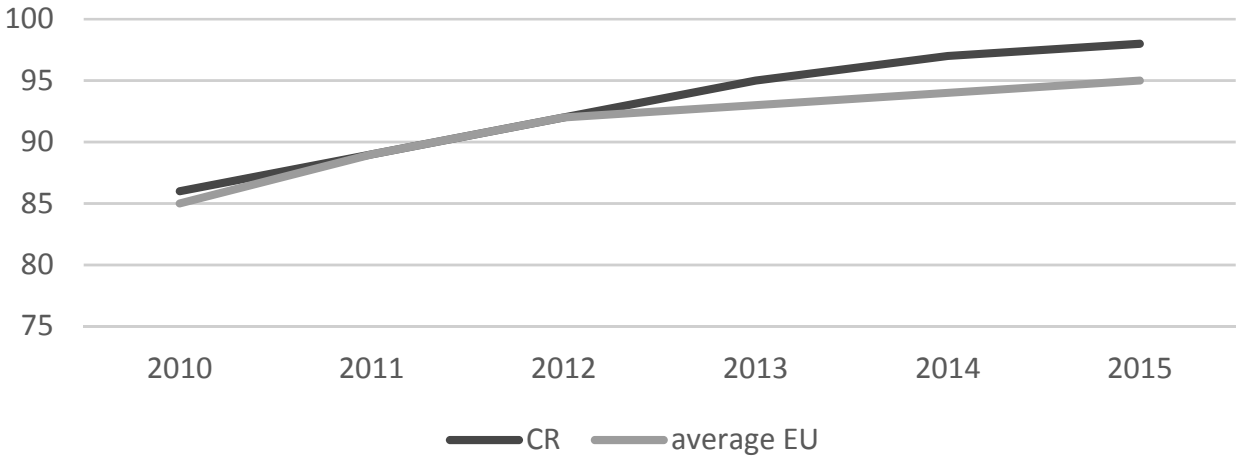
2.1.5. The percentage of enterprises with a broadband connection

Like in the previous indicators it is assumed that the more enterprises use the internet the more likely they are to support the process of computerization of public administration as well as make the process of exchanging goods and services more efficient hence supporting both the efficiency of the public sector as well as the private one and fulfilling the aim of the e-Government. In that case the aim should be the same as in the case of the previous indicators, which is to reach as high a percentage number as possible. Concerning this indicator, it has to be said that yet again the numbers are already very high. The Czech Republic is the country with a high percentage of enterprises with a broadband connection and has always been either over or equal to the EU average. The development of this indicator shows that though originally the rate of the EU and the Czech

Republic was the same in 2010 at 86% nowadays the rate in the Czech Republic which is 98% is slightly over the EU rate which is 93%.

The development of the indicators and its comparison can be seen in the following graph:

Graph no. 5: Percentage of enterprises with a broadband connection



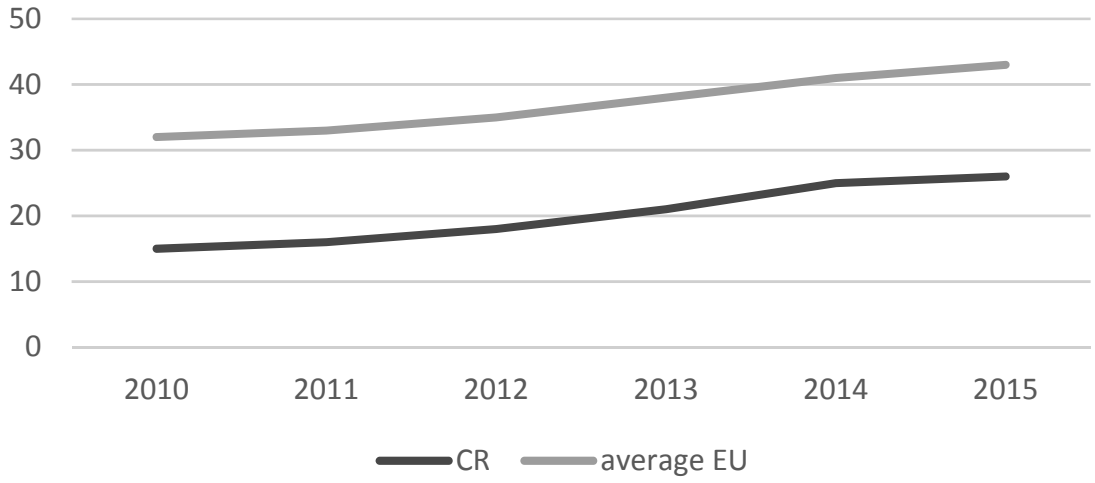
Composed by the author with the data available from Eurostat

2.1.6. The Percentage of Individuals Having Purchased/Ordered Online in the Last Three Months

It is assumed that the more individuals use the internet for on-line purchases the more likely they are to use the internet in order to support the process of computerization of the public administration as well as make the process of exchanging goods and services more efficient hence supporting both the efficiency of the public sector as well as the private one and fulfilling the aim of the e-Government. The higher the number the better. Regarding this indicator, it has to be said that generally the numbers are rather low and have been a bit below the EU average with the original 15% in 2010 to the current 26% in 2015 while the EU average was 32% in 2010 and went up to 42% in 2015. So this indicator certainly leaves room for improvement. On the other hand, it is hard to establish how much the fact that people shop online affects the efficiency of the public administration. If people shop online are they more likely to use the computer for communication with the public administration? To what extend?

The development of the indicators and its comparison can be seen in the following graph:

Graph no. 6: Percentage of individuals having ordered online in the last three months



Composed by the author with the data available from Eurostat

The above average EU countries in 2015 were the following: Denmark, Estonia, Finland, Germany, Ireland, Luxembourg, Netherlands, Sweden, United Kingdom.

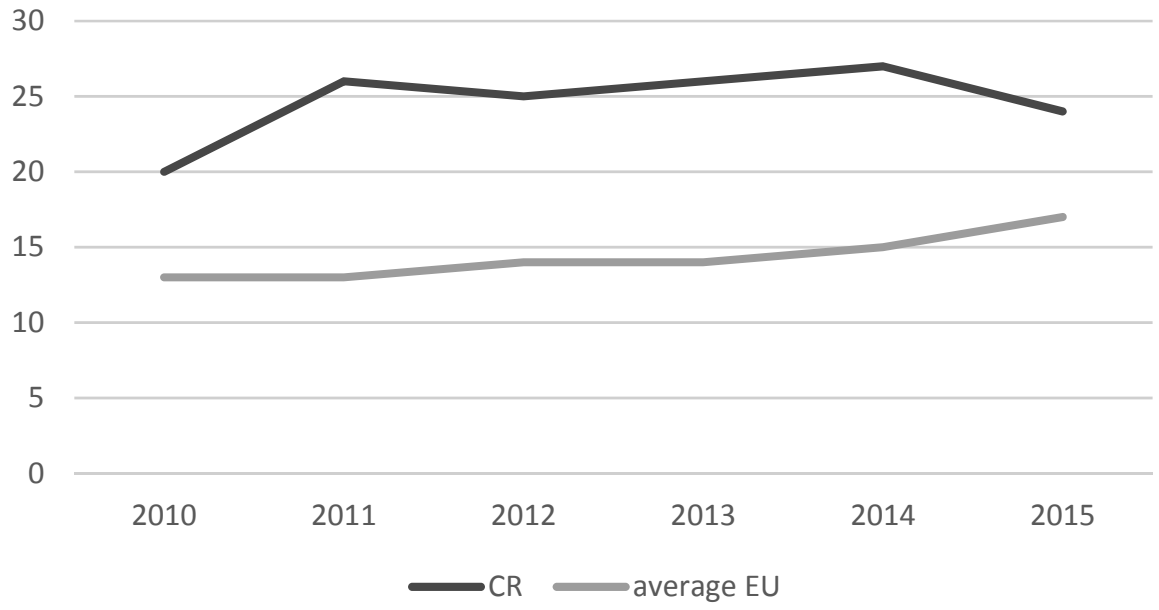
2.1.7. The Percentage of Enterprises Having Received Orders Online within the Previous Year

The assumption drawn is that the more enterprises receive orders online the more likely they are to support the process of the computerization of the public administration as well as make the process of exchanging goods and services more efficient hence supporting both the efficiency of the public sector as well as the private one and fulfilling the aim of the e-Government. These indicators would ideally reach as high a number as possible. It has to be said that the numbers for the Czech Republic are very low. On the other hand, the Czech Republic has always been above the EU average which means that almost a quarter of the Czech enterprises have received orders online within the previous year with the numbers starting at 20% in 2010 and rising to 26%, 25%, 26%,27% and falling to 24%. The development of this is interesting on its own and suggests either a very slight rise or more likely stagnation but the fact that the numbers are above the EU average which was 13% in 2010 and very slowly rose to 16% in 2015 which corresponds with the proposed very slight rise or stagnation are also interesting. Surely an increase in this indicator would be desired as it would certainly at least have made business more efficient, the question is why the numbers are so low and also why the average EU is even lower. This can be easily explained by the

graph no.8 illustrating the data for 2015 of all the EU countries. It can be seen that the companies have access to the internet and broadband connection (those numbers were over 90% in both indicators but also the number of individuals having purchased on line is higher than the number of enterprises having received orders on-line). The only conclusion that springs to mind is the fact that though the companies use the internet they do not actually use it to provide shopping on-line.

The development of the indicators and its comparison can be seen in the following graph:

Graph no. 7: Percentage of enterprises having received orders online within the previous year



Composed by the author with the data available from Eurostat

The above EU average countries are the following: Belgium, Croatia, Czech Republic, Denmark, France, Germany, Ireland, Lithuania, Portugal, Sweden, United Kingdom.

2.1.8. Summary of Generic Indicators

The development of the first five indicators is more than favourable. On the other hand, the last two indicators have not been developing at all as favourably as might have been hoped for. It clearly shows that computers are not used for shopping purposes. One may not necessarily see the connection between shopping online and using the internet for communication with the government authorities. It is assumed that should people use their computers for shopping

they are more likely to use them for communication with the authorities. But is that really the case? Surely there must be some other reasons behind it rather than just the availability of the internet connection.

The actual internet communication between people and the public authorities is shown in the following section analysing the development of e-Government indicators.

2.2. e-Government Indicators

2.2.1. The Percentage of Individuals Using the Internet for Interacting with Public Authorities

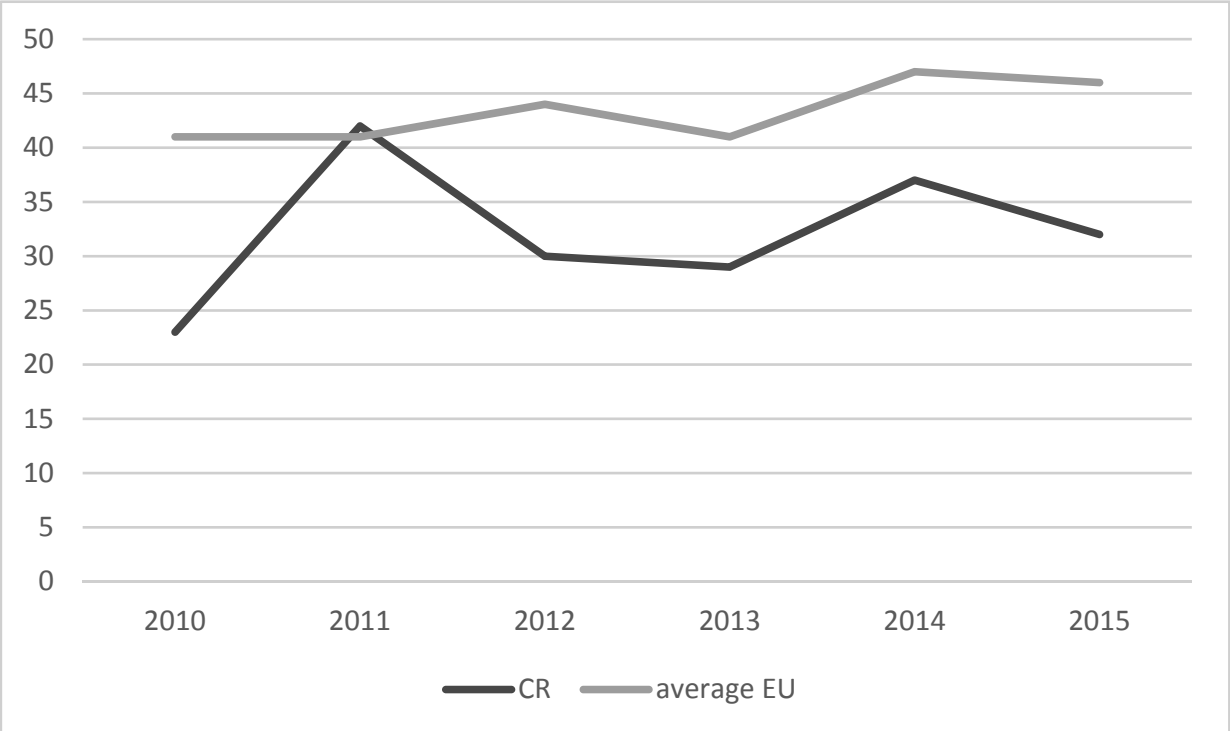
The development of this indicator in the Czech Republic is rather interesting with the original 29% in 2010 which was much lower than the EU average of 2010 of 41% but in 2011 the Czech Republic significantly increased to a percent higher than the EU average which was 41% in the EU average and 42% in the Czech Republic. In 2012 though the Czech Republic showed a significant drop to 30% while the EU average increased to 44%. In 2013 there were drops in both indicators with the Czech Republic falling to 29% and the EU average to 41%. In 2014 though both indicators rose with the Czech Republic significantly increasing to 37% the EU average was 45%. In 2015 the Czech Republic fell to 32% and the EU average was 44%.

This indicator is more directly connected with the process of computerization in public administration and should more or less directly reflect the success of the process where the desired goal is obviously a high number of computerized public administration processes leading to an increase in the efficiency of the public administration and hence the whole economy. Out of the EU countries Slovakia shows also a very interesting development as it has increased and stayed above the EU average reaching 59% in 2015. It would sure be interesting to learn why the number in Slovakia is so much higher compared to the other countries, was there a more efficient campaign carried out? Can people see the benefits of computerization? And why do people in other countries not seem to be of the same opinion? Do people find it more complicated and complex? On the other hand, all the indicators concerning the use of the internet and so on were not that much different so it is fair to say that it is not due to the accessibility of the internet. Is the level of computerization different in Slovakia to the rest of the countries? Or is it the mentality of people? Or can it have something to do with the electronic registration of sales?

Countries with above average EU results in 2015 are: Austria, Belgium, Denmark (84%), Estonia, Finland, Germany, Ireland, Latvia, Luxembourg, Netherlands, Slovakia, Spain, Sweden, United Kingdom.

The development of the indicators and its comparison is in the following graph:

Graph no. 8: Percentage of individuals using the internet for interacting with public authorities



Composed by the author with the data available from Eurostat

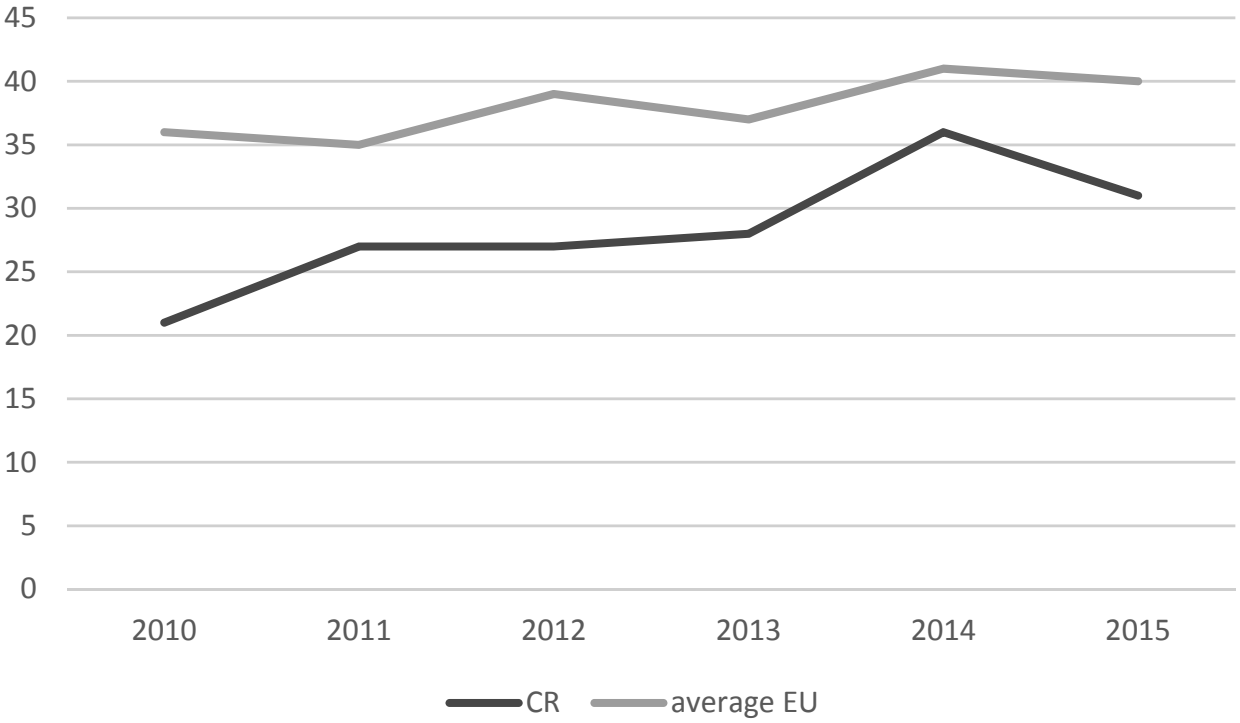
2.2.2. The Percentage of Individuals Using the Internet for Obtaining Information from Public Authorities

This indicator is also more directly connected with the process of computerization in public administration and should more or less directly reflect the success of the process where the desired goal is obviously a high number of computerized public administration processes leading to the increase in the efficiency of the public administration and hence the whole economy. The Czech Republic has been showing a gradual rise from the original 21% to 31% in 2015. The development of this indicator has been more or less copying the development of the EU average.

Countries with above average EU results in 2015 are: Austria, Belgium, Cyprus, Denmark, Estonia, Finland (100%), France, Germany, Greece, Ireland, Latvia, Lithuania, Luxembourg, Netherlands, Slovakia, Slovenia, Spain, Sweden.

The development of the indicators and its comparison can be seen in the following graph:

Graph no. 9: Percentage of individuals using the internet for obtaining information from public authorities



Composed by the author with the data available from Eurostat

2.2.3. The Percentage of Individuals Using the Internet for Downloading Official Forms from Public Authorities

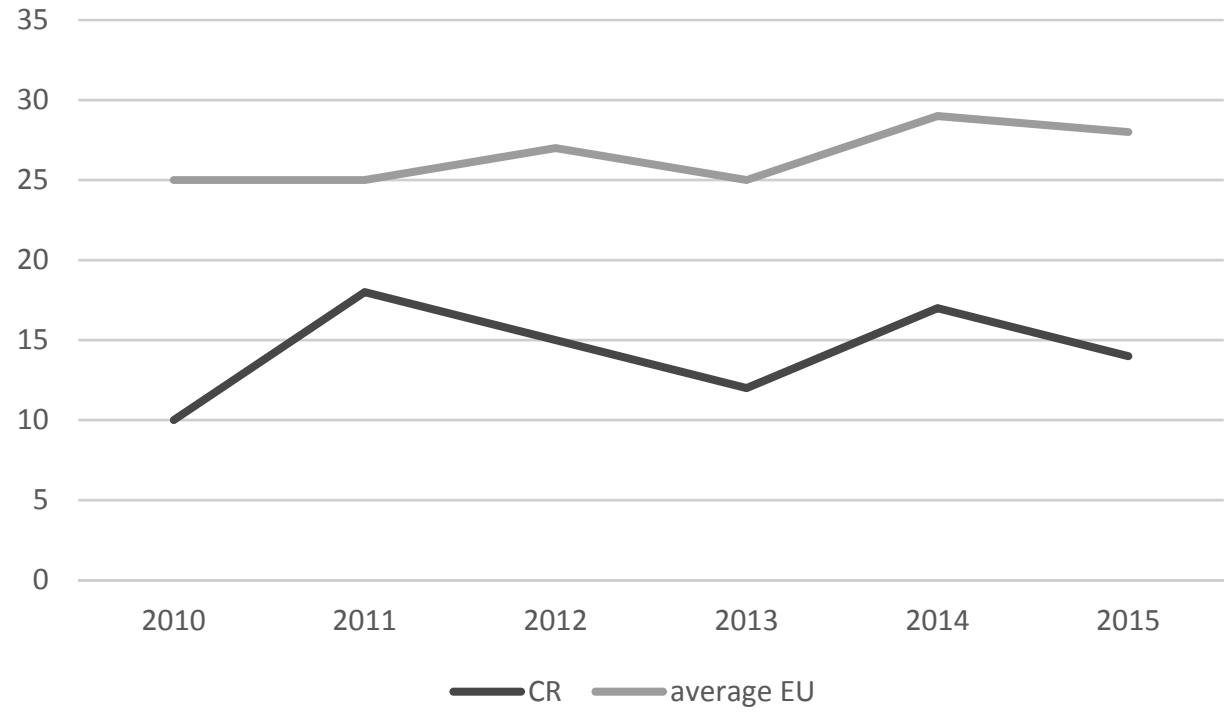
This indicator is also more directly connected with the process of computerization in public administration and should more or less directly reflect the success of the process where the desired goal is obviously a high number of computerized public administration processes leading to an increase in the efficiency of the public administration and hence the whole economy. Regarding the individuals using the internet for downloading official forms from public authorities the Czech Republic is a country with numbers below the EU average.

This indicator has shown similar development as the previous one with the Czech Republic lower than the EU average but does not show significant changes in either indicator with the 10% for the Czech Republic in 2010 as opposed to 26% of the EU average and 28% in 2015 while the Czech Republic rose to 14%. The Czech Republic shows an interesting development between the years 2010–2013 though, with the original 10% raising to 18% and dropping down to 15%, 12% and then bouncing back to 17% and finally down to the mentioned 14%. The development in the EU was similar though there were only very slight changes in percentage such as one to two percent.

Countries with above average EU results in 2015 are: Austria, Denmark (84%), Estonia, Finland, Germany, Ireland, Latvia, Luxembourg, Malta, Netherlands, Slovenia, Spain, Sweden, United Kingdom.

The development of the indicators and its comparison can be seen in the following graph:

Graph no. 10: Percentage of individuals using the internet for downloading official forms from public authorities



Composed by the author with the data available from Eurostat

2.2.4. The percentage of individuals using the internet for sending completed forms to public authorities

This indicator is yet again more directly connected with the process of computerization in public administration and should more or less directly reflect the success of the process where the desired goal is obviously a high number of computerized public administration processes leading to an increase in the efficiency of the public administration and hence the whole economy. Regarding the individuals using the internet for sending completed forms to public authorities this is probably the most important indicator of them all as this would be where the public administration would benefit from computerization the most along with the whole economy.

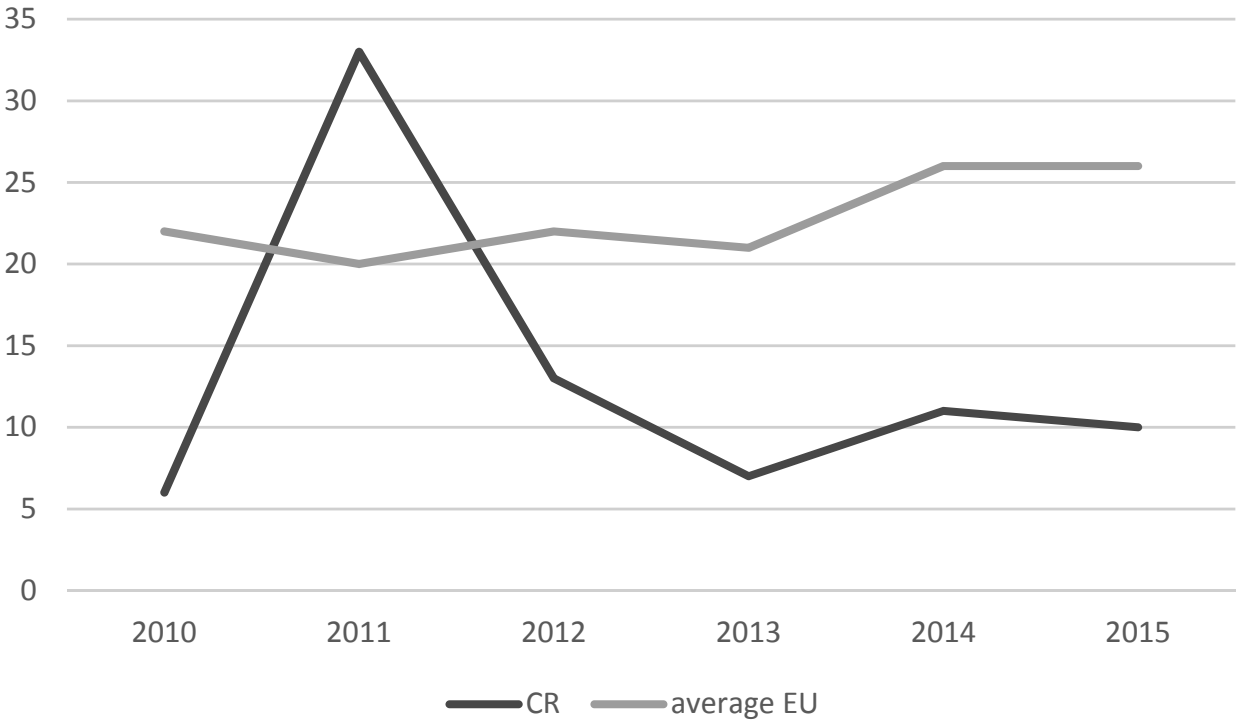
The development of this indicator is very interesting in the Czech Republic. While the EU average has been very slightly rising from the original 21% to the

current 26%, the Czech Republic with the original very low 6% in 2010 jumped to 33% in 2011 while the EU average was 20% but then in 2012 dropped down to 13% while the EU average rose to 22% and in 2013 went down to 21% while the Czech Republic kept dropping to 7%. In 2014 the average EU rose slightly to 26% and stayed at 26% in 2015 while the Czech Republic rose to 11% in 2014 and dropped to appalling 10% in 2015. This raises several questions such as what caused the magnificent rise of 27% from 2010 to 2011 and why did it not stay that way rather than falling down to 10% in 2015. Is it to do with the difficulty with filling in the forms? But that would not explain the rise, that might explain the low numbers. Or could it be that people tried and then found out that it was not as time efficient as they would have thought hence decided not to carry on? On the other hand, the development in the EU is showing a gradual rise which again could mean various things such as that some countries used a very successful campaign and so on.

Countries with above average EU results in 2015 are: Austria, Belgium, Denmark, Estonia, Finland, France, Ireland, Latvia, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom.

The development of the indicators and its comparison can be seen in the following graph:

Graph no. 11: Percentage of individuals using the internet for sending filled forms to public authorities



Composed by the author with the data available from Eurostat

2.2.5. Summary of e-Government Indicators

The development of the e-Government indicators has not been nowhere near as favourable as the Information society indicators. Out of the four indicators the last one, which probably happens to be the most important one, seems to be the one showing the most interesting development which would surely be worth looking into further. As surely the aim is to make the percentage of individuals filling and sending forms to the authorities as high as possible it would be rather interesting to look deeper into the reasons that led the Czechs to rise from 6% to 33% and then drop down to 12%. If it was possible to analyse the reasons behind this, it might be easier to persuade the public to increase the e-Government indicators all together as the Czech Republic has shown under average EU results in all of them. On the other hand, for example Slovakia has shown above average EU results in the first two indicators. Countries that have shown above average results in all of the four indicators are: Austria, Denmark, Estonia, Finland, Ireland, Latvia, Luxembourg, Netherlands, Spain and United Kingdom. These might be worth looking at closer to try and ascertain the motivation of the people.

3. Conclusion

The aim of the article was to provide an analysis and comparison of the development of the information society with the emphasis on e-Government in the Czech Republic which is compared with the EU average and deduce the improvements of the position for the Czech Republic. This was done with some limitations starting with the Information society indicators which are on their own limited.

The first part looked at the Generic indicators and though it was not possible to supply the reason behind the use of these indicators the outcomes of the analysis and comparison were provided stating that for example the development of the first five indicators is more than favourable. On the other hand, the last two indicators have not been developing at all as favourably as might have been hoped for. It clearly shows that the computers are not used for shopping purposes. One may not necessarily see the connection between shopping online and using the internet for communication with the government authorities. It is assumed that should people use computers for shopping they are more likely to use them for communication with the authorities. But is that really the case? Surely there must be some other reasons behind it rather than just the availability of the internet connection. It should also be stated that the results of the indicator

monitoring percentage of individuals having purchased/ordered online in the last three months were generally perplexingly different to percentage of enterprises having received orders in the previous year – meaning that the percentage of individuals that ordered was much higher than percentage of enterprises that received orders even when counted in quarter of year periods. Does it mean that individuals were ordering from individuals rather than enterprises? And did the percentage of enterprises receiving orders include orders from individuals as well as orders from other enterprises?

Generally, it needs to be stated that the reason behind these indicators is still unclear and raises questions.

The second part looked at the e-Government indicators and was rather more interesting though it must be said that the results for the Czech Republic were rather appalling as well as interesting – especially the development of the last indicator being the percentage of individuals using the internet for sending completed forms to public authorities. As it has already been stated it would be rather interesting to look deeper into the reasons that led the Czechs to rise from 6% to 33% and then drop down to 12%. If it was possible to analyse the reasons behind this, it might be easier to persuade the public to increase the e-Government indicators all together as the Czech Republic has shown below average EU results in all of them. Countries that have shown above average results in all of the four indicators are: Austria, Denmark, Estonia, Finland, Ireland, Latvia, Luxembourg, Netherlands, Spain and United Kingdom. These might be worth looking at closer to evaluate the motivation of the people.