

# ON STIMULUS FOR USE PUBLIC INFORMATION SERVICES IN THE EUROPEAN UNION

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## **Abstract**

*The paper presents some social causes which stimulate or divert citizens from using public available information services in the EU countries. Analysis is based on the secondary information sources from EU. We find out that national innovativeness is the strongest indication of environment that motivates use of e-services. On the other side, we concluded that common presumption that public interest in information technologies significantly stimulates usage of e-services is not correct. We pointed to high correlation between usage of public e-services and general trust among citizens, which is an important part of the Social Capital. Consequently, well known inertia of social variables over time will prevent fast leaps in the use of e-services in countries with low or average social capital and dissimulative social values. It is also interesting that behavior of old EU15 and new EU27 member states is quite often different. For IT STAR countries it is particularly important to assess their progress into information society with proper indicators. Otherwise, they can make wrong conclusions followed by inappropriate public measures. Finally, results also indicate that large systems like public administration and other big e-service providers have to find much more innovative instrument to motivate citizens to use their e-services.*

## **Key words**

Public information services, Motivation of users, EU, Social environment

## **1. WHAT MOTIVATES THE USE OF PUBLIC E-SERVICES**

Implementation of any IT project depends on users' motivation and acceptance of new e-services. Basically, we have two groups of users. In the first group are internal employees in corporations, public administration, or any other organization. As employees they are bound to use in-house introduced application regardless of their personal position. Individual motivation is obviously less important and all potential problems with the use of new services are solved internally. On the other side, we have more and more IT applications that are developed for public use outside of the provider's organization. In such cases we don't have a managerial authority to enforce external clients to use particular application. Typical examples are public e-government services (Scharma, 2004, Wauters in Colclough, 2006, Bavec in Vintar, 2007). Practical experiences and also researches (Heeks, 2003) confirm that citizens' acceptance of public e-services is not granted per se and that public acceptance is quite often below what providers expected (Deursen, van Dijk, and Ebbers, 2006). It indicates that they often misjudge citizens' motivation and stimulus to use public services.

Understanding what motivates citizens is obviously a relevant issue for service providers and also for national decision-makers that are responsible for development of information society (Centeno, van Bavel, and Burgelman, 2004). From this point of view, it is interesting to notice that the use of many public services significantly vary across European regions (Wauters and Colclough, 2006). For example, Nordic countries are doing significantly better than Southern or Central European countries. We could imagine many reasons for that. The usage of public e-services is clearly correlated with economic power of these countries and their ability to invest into different e-services. However, economy cannot explain all regional differences (Bavec, 2007, Van Oorschot in Arts, 2005, Pohlmann, 2005). We should also look for other forces that cause this diversity.

There are many different concerns that influence users. The basic one is a comfort that new e-service provides to users. However, many evidently helpful applications for wider public were not utilized as predicted. So, what are other stimuli that have to be considered? One of them is a social environment that influences behavior of individuals. This issue is too often neglected or overlooked. We can illustrate this view with the indicators for assessing information society where technological and macro-economic indicators entirely prevail even in comprehensive EU projects designed to evaluate development of European information society (Spangenberg, 2005). From his point of view it is enough to have high penetration of IT technology and appropriate infrastructures. The use will automatically follow technology. Many researchers and practitioners argue this stand. For that reason is introduction of “softer” socially oriented indicators an exciting research issue with significant practical consequences.

In the paper we present partial results of a wider research on social acceptability and users’ absorption ability of innovations and consequently of new e-services in EU27. We were interesting in regional dissimilarities and tried to identify any possible differences between old EU15 and new EU member states. Our research ambition was limited to initial assessment of social values and individual citizens’ perceptions that are significantly correlated with the public use of e-services.

## 2. SHORT PRESENTATION OF RESEARCH

We performed a typical desk research based on publicly available data from Eurostat, Eurobarometer, and other European Commission’s information sources:

1. Individual use of Internet (Eurostat, 2007);
2. Use of e-commerce by individuals (Eurostat, 2007);
3. Public use of e-government services (Eurostat, 2007);
4. Public interest in Internet (Special Eurobarometer 282, 2007);
5. Public interest in IT news in media (Special Eurobarometer 282, 2007);
6. Public interest in innovations and Science and Technology (Special Eurobarometer 224, 2005);
7. Level of computer skills (Eurostat, 2007);
8. Public perception that personal data are properly protected (Special Eurobarometer 225, 2005)
9. Work at home (Eurostat, 2006)
10. Work requires learning new things (Eurobarometer 273, 2007);
11. Personal Trust (Special Eurobarometer 223, 2005)
12. National Innovativeness – Summary Innovation Index (European Innovation Scoreboard 2006).

To reduce dimensions of the model we introduced a *Composite index of public use of e-services* (sum of individual use of Internet, E-commerce, and public use of e-government services). In the initial phase of the research we were interested mainly in correlations between this index and selected indicators describing different social values, public interests and working requirements. Our first hypothesis was based on “common sense” assumption that high public interest in Internet and IT stimulates higher use of public e-services. The second hypothesis predicted that some social values and habits have positive effect on the use of e-services.

In the Table 1 we collected individual data elaborated in this paper.

| Country     | Acronym | Composite index of public use of e-services | Public interest in Internet | Public interest in IT news in media | Public interest in innovations and S&T | Individual level of computer skills | Perception that personal data are properly protected | Work at home | Work requires learning new things | Personal trust | National innovativeness |
|-------------|---------|---|-----------------------------|-------------------------------------|--|-------------------------------------|--|--------------|-----------------------------------|----------------|-------------------------|
| (1)         | (2)     | (3)   | (4)                         | (5)                                 | (6)                                    | (7)                                 | (8)  | (9)          | (10)                              | (11)           | (12)                    |
| Austria     | AT      | 114   | 2,19                        | 22                                  | 32                                     | 0,48                                | 77   | 117          | 71                                | 32             | 0,48                    |
| Belgium     | BE      | 101   | 1,71                        | 13                                  | 29                                     | 0,48                                | 81   | 142          | 70                                | 29             | 0,47                    |
| Bulgaria    | BG      | 36  | 2,07                        | 24                                  | 17                                     | 0,21                                | 59   | 36           | 42                                | 17             | 0,23                    |
| Cyprus      | CY      | 63  | 1,53                        | 12                                  | 18                                     | 0,3                                 | 90   | 100          | 69                                | 18             | 0,33                    |
| Czech Rep.  | CZ      | 66  | 1,82                        | 19                                  | 17                                     | 0,34                                | 80   | 94           | 58                                | 17             | 0,36                    |
| Germany     | DE      | 148   | 1,75                        | 17                                  | 35                                     | 0,59                                | 85   | 119          | 75                                | 35             | 0,59                    |
| Denmark     | DK      | 177   | 2,42                        | 24                                  | 76                                     | 0,63                                | 82   | 222          | 84                                | 76             | 0,61                    |
| Estonia     | EE      | 95  | 2,07                        | 19                                  | 33                                     | 0,34                                | 75   | 105          | 69                                | 33             | 0,37                    |
| Greece      | EL      | 45  | 1,34                        | 10                                  | 18                                     | 0,22                                | 81   | 91           | 58                                | 18             | 0,26                    |
| Spain       | ES      | 83  | 1,88                        | 19                                  | 36                                     | 0,31                                | 77   | 62           | 62                                | 36             | 0,31                    |
| Finland     | FI      | 157   | 1,89                        | 16                                  | 61                                     | 0,68                                | 83   | 157          | 88                                | 61             | 0,64                    |
| France      | FR      | 124   | 1,30                        | 8                                   | 22                                     | 0,48                                | 86   |              | 80                                | 22             | 0,47                    |
| Hungary     | HU      | 81  | 1,76                        | 23                                  | 25                                     | 0,26                                | 79   | 60           | 41                                | 25             | 0,26                    |
| Ireland     | IE      | 109   | 2,22                        | 22                                  | 32                                     | 0,48                                | 74   | 117          | 67                                | 32             | 0,49                    |
| Italy       | IT      | 57  | 1,43                        | 8                                   | 21                                     | 0,34                                | 72   | 32           | 65                                | 21             | 0,33                    |
| Lithuania   | LT      | 67  | 2,66                        | 34                                  | 14                                     | 0,27                                | 60   | 54           | 62                                | 14             | 0,27                    |
| Luxembourg  | LU      | 161   | 1,86                        | 14                                  | 31                                     | 0,54                                | 86   | 107          | 72                                | 31             | 0,53                    |
| Latvia      | LV      | 76  | 2,53                        | 30                                  | 15                                     | 0,22                                | 75   | 44           | 76                                | 15             | 0,19                    |
| Netherlands | NL      | 159   | 2,32                        | 18                                  | 61                                     | 0,49                                | 87   | 170          | 81                                | 61             | 0,48                    |
| Poland      | PL      | 65  | 2,35                        | 31                                  | 10                                     | 0,22                                | 69   | 26           | 70                                | 10             | 0,24                    |
| Portugal    | PT      | 60  | 1,85                        | 19                                  | 24                                     | 0,23                                | 68   | 77           | 63                                | 24             | 0,25                    |
| Romania     | RO      | 29  | 2,48                        | 29                                  | 17                                     | 0,19                                | 58   | 35           | 52                                | 17             | 0,18                    |
| Sweden      | SE      | 167   | 0,86                        |                                     | 64                                     | 0,73                                | 89   | 177          | 80                                | 64             | 0,73                    |
| Slovenia    | SI      | 88  | 1,93                        | 18                                  | 24                                     | 0,35                                | 82   | 120          | 69                                | 24             | 0,35                    |
| Slovakia    | SK      | 85  | 2,24                        | 25                                  | 16                                     | 0,23                                | 75   | 63           | 64                                | 16             | 0,25                    |
| UK          | UK      | 147   | 2,21                        | 25                                  | 36                                     | 0,53                                | 78   | 154          | 78                                | 36             | 0,57                    |

**Table 1:** Individual data for EU member states (not including Malta)

|  | Correlations with the Composite index of public use of e-services |
|--|---|
| National innovativeness                | 0,91  |
| Work at home                           | 0,85  |
| Level of computer skills               | 0,83  |
| Personal trust                         | 0,83  |
| Work requires learning new things      | 0,78  |
| Public interest in innovations and S&T | 0,66  |
| Personal data are properly protected   | 0,65  |
| Public interest in Internet            | 0,44  |
| Interest in IT news in media           | -0,21   |

**Table 2:** Correlation of selected indicators with use of public e-services

In the Table 2 we can see correlations with public use of e-services sorted from the highest to the lowest value. The most essential indicator that identifies highly stimulative environment for the use of public e-services is obviously national innovativeness (Summary Innovation Index on country level) with the correlation  $R=0,91$ . This complex index is composed from 26 indicators measuring all relevant national activities that contribute to national innovativeness and is assessed by the European Commission every year. An overall innovative economic and social environment is obviously the main stimuli even for individual users. However, we could also hypothesize in opposite direction; that general public innovativeness and openness to new technologies is a basis for national innovativeness. The next on the list is percentage of employees working predominantly at home ( $R=0,85$ ). Individuals working at home are likely using Internet more extensively than others, so it is not a surprise that they also use public e-services more often. It is also reasonable that high level of computer skills stimulates use of e-services ( $R=0,83$ ).

Less obvious is high correlation between the use of public e-services and personal trust. In this case we have to emphasize that we are talking about interpersonal trust and not trust into technology or service providers. This correlation indicates that trustful environment significantly stimulates citizens to be innovative and consequently to use e-services (Putnam, 1993, Sabatini, 2006). Trust is also an important component of the Social Capital, so we can hypothesize that the Social Capital is a relevant stimulus, too. This conclusion leads to some other hypothesis. For example, that we can not reach very high usage of public e-services just with technological means and “education” of users because we could be suppressed by social environment. The correlation between Social Capital and other social issues on one side and public openness to new technologies and services on the other side is fairly uncharted area in theory and practice.

The first group of highly correlated indicators ends with citizens’ perception that their work requires permanent learning new things. It means that innovative working setting also influence individual use of public e-services ( $R=0,78$ ). Less expected results are again seen in the second part of the Table 2. Public interest in Internet and IT in news has low or nearly no effect on public use of e-services ( $R=0,44$  and  $R=-0,21$ ). Much higher effect has a general interest in innovations and S&T ( $R=0,66$ ) which comes as a small surprise. These conclusions contradict common opinion that interest in Internet automatically provoke its use. It is difficult to give a comprehensive explanation for that finding, but we can guess that public services are relatively easy to use and they don’t require extensive knowledge of IT. Interest in Internet and IT is limited to a smaller group of citizens. Some researches (Estabrook in Rainie, 2007) indicate that relation between use and interest in Internet can be interpreted on the very opposite way. Use of Internet consecutively stimulates interest in Internet as technology and even in classical libraries with primary source of information.

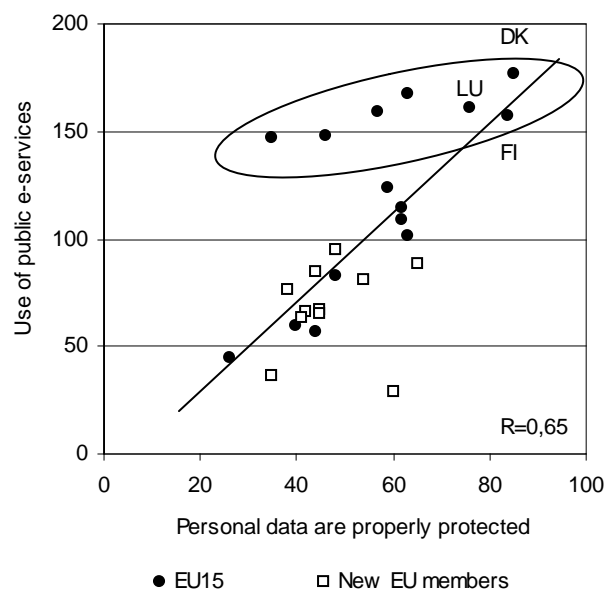
We will conclude this brief comment on correlations in Table 2 with moderate correlation between citizens’ belief that personal data are properly protected and the use of public e-services ( $R=0,65$ ). It looks that people generally trust e-service providers and governments that they implemented a trustful framework for personal data protection.

### 3. GRAPHIC PRESENTATIONS OF SELECTED INTERDEPENDANCES

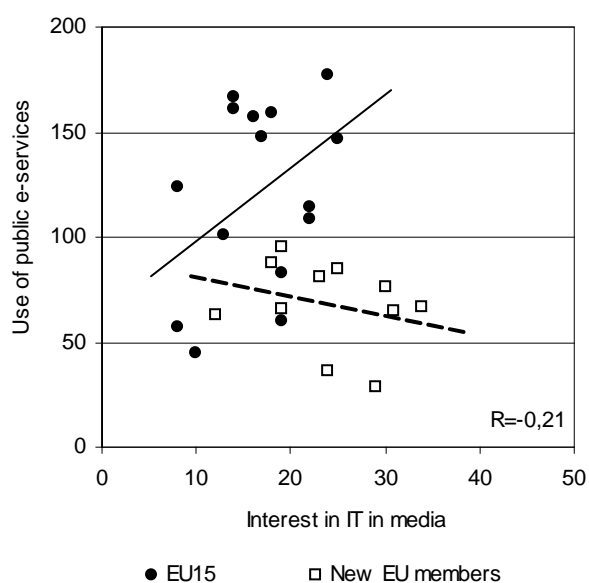
From correlations in the Table 2 we can comprehend just statistical averages for all EU member states. However, graphical presentation is the easiest way to provide us with deeper insight into the structure of interdependences and eventual clustering of countries. We will present just few most illustrative examples.

In the Figure 1 we can notice that in EU countries with the highest use of e-services (DK, SE, LU, NL, FI, DE, UK) public perception that personal data are properly protected doesn’t play any role in their decision to use these services. They demonstrate very high usage of e-services, regardless that many of them don’t believe that personal data are well protected. We could just guess that there are some other motivators that overcome data protection issues. On the other side, in all other countries citizens’ concerns in personal data protection correlates with the use of e-services.

We have already concluded that interrelation between the public interest in IT and the use of e-services is not relevant, but it is interesting to notice how differently are clustering new and old EU member states (Figure 2). In many new EU countries interest in IT in media is even higher then in the old ones. Nevertheless, their use of public e-services is significantly lower and entirely independent of this interest. Old member states display low but positive correlation ( $R=0,36$ ).



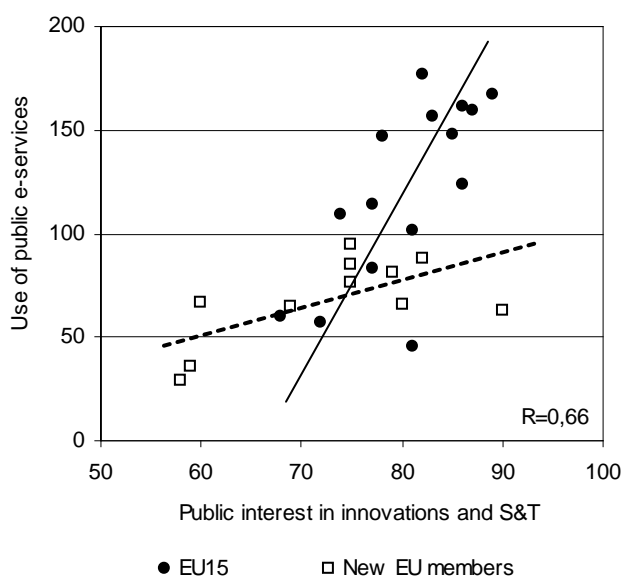
**Figure 1:** Interdependence between the use of public e-services and public believe that personal data are properly protected



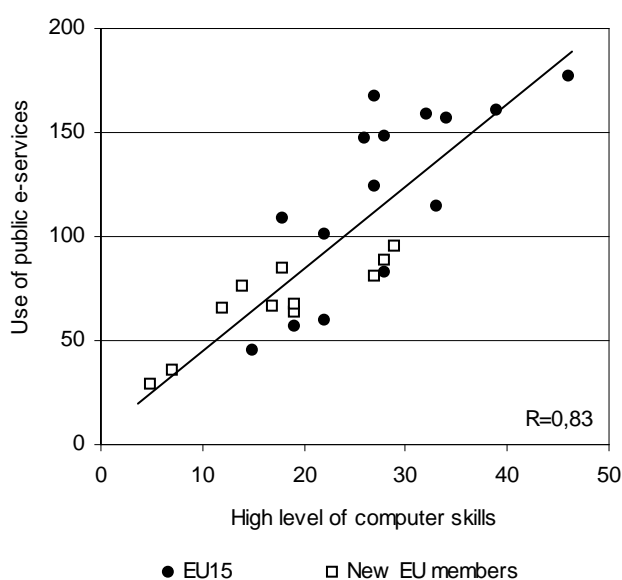
**Figure 2:** Interdependence between the use of public e-services and interest in IT in media

The difference between new and old EU member states is even more evident in the Figure 3. The correlation between use of e-services and public interest in innovations and S&T is significantly

higher in the old EU member states and significantly correlated with use of e-services. In new EU member states is this correlation lower, it means that higher interest in innovations and S&T has much lower impact on use of e-services than in old member states.



**Figure 3:** Interdependence between the use of public e-services and public interest in innovations and S&T



**Figure 4:** Interdependence between the use of public e-services and public interest in innovations and S&T

On the other side, Figure 4 reveals that computer skills have the same effect in all EU countries; higher skills lead to higher use of public e-services. We will not present other graphs, but very similar patterns demonstrate interdependences with the following indicators: National innovativeness, Work at home, Personal trust, and Work requires learning new things. There were no differences in the behavior of old and new member states.

#### 4. CONCLUSIONS

In this short presentation we argue that it is not so obvious what motivates or de-motivates individuals to use public e-services. We concentrated our discussion on “softer” and more socially oriented indicators. We intentionally omitted economic (GDP per capita or investments into IT) and technological (IT penetration, availability of Internet and so on) indicators because we know from many other researches that they significantly correlated with the use of public available e-services. In search for relevant indicators that describe social environment that stimulate use of e-services we identified four of them that are statistically highly significant: national innovativeness, work at home, level of computer skills, and personal trust. It is interesting that each of them identify very distinctive group of social values or conditions in which citizens use public e-services. Particularly personal trust and innovativeness are not directly linked to IT, and this is the main reason that they are neglected in majority of assessments on use of IT and e-services. However, they are obviously relevant and this fact in some way explains why some regions are significantly more efficient in use of public services than others. As we already said, pure economic and technological indicators revealed just a part of a puzzle that composed individuals’ relation to IT and new services.

What we can learn from these conclusions? Firstly, e-service providers from government agencies to private corporations should take into account national innovativeness and different social aspects in particular country or region. They should understand the reasons why we can not make “big leaps” just by introducing more and more e-services and investing into technology. Social environments have brakes and accelerators that could significantly influence behavior of users. On the other side, social values, habits and also social capital are very inert over time and are changing slowly; in any case slower than technology and new services. As result, it is easy to transfer technological solutions from one country or region to another, but the effect of these solutions will be different in different countries, dependently on social environment.

Secondly, in many cases we can notice different public behavior in old and new EU member states. We have seen these differences on many other areas, too. Particularly for the Central European countries we can hypothesize that for some historical reasons and their recently ended transition to market economy they still “adjust” their social structures. On the other side they demonstrate agility and readiness for changes seen, for example, in relatively high public interest in IT. However, they still lag behind the old member states in using public e-services.

Majority of IT STAR members are new EU member states. So, for them it is particularly important to assess their progress into information society, which also includes use of e-services, with proper indicators. Otherwise, they can make wrong conclusions followed by inappropriate public measures. We should avoid only economic and technological indicators which would lead policy makers just to higher investments. We have to balance these investments with national efforts to change public atmosphere concerning IT and innovative e-services and perception of potential users. Otherwise, many costly investments could be in vane.

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