Measuring the Level of eInclusion within Exclusion Prone Groups of the European Community: Findings of ICT for ALL Project

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Abstract: This paper summarizes the major findings to date of methodological work related to the measurement and evaluation of eInclusion by the project ICT for ALL. ICT for ALL focuses on development of indicators that will allow the longitudinal benchmarking of digital gap concerning four exclusion prone social communities: disabled, unemployed, immigrants and elderly people. The ICT for ALL project have drawn up a detailed guidelines for the methodology of data collection behind the indicators. The eInclusion indicators should both serve as benchmarks and as reference for technological development to make ICT more accessible to all.

1. Objectives

As computers and Internet become more ubiquitous effecting all fields of life from economy to social relations, those of us who are not using digital technologies may suffer from more and more economic, cultural or educational disadvantages [1][2]. Furthermore, a number of studies have shown that the adoption of new technologies by different social groups will follow different dynamics; this is greatly affected by classic socio-economic variables such as age, education or type of settlement.

The term digital inclusion was introduced in the United States by the fourth Falling Through the Net study [3]. This research examined the use of computers and access to Internet among people with disabilities. In contrast, previous studies had been focusing on the level of access by different social groups classified by general socio-economic characteristics and tended to talk about digital divide with reference to the low technology adoption within groups disadvantaged in these terms.

The concept of eInclusion implies that technology could help the social and economic inclusion of certain disadvantaged groups. To achieve this, special barriers to access (and usage) of technologies have to be reduced. The barriers could be material (economic disadvantage), knowledge (lack of necessary skills), mental (lack of interest), and in certain cases physical (physical disabilities). However, removing obstacles is not enough, since eInclusion implies that the opportunities offered by ICT must be utilised. While the opportunities offered by ICT may be important for all social groups, there are certain situations when the technology could directly help social inclusion and remedy disadvantages. A good example is the telework offered for people with physical disabilities, or the access to information for the blind.

eInclusion is a relatively recent policy target for the European Union. At the Riga meeting in 2006, eInclusion was described as a concept for involving disadvantaged

population groups and regions into the global Information Society through facilitating the access to and the usage of Information and Communication Technologies (ICT). EU Member States, accession and candidate countries, and EFTA/EEA countries signed a declaration in Riga, which set outs a wide range of targets from increasing the broadband coverage to reducing the gap in internet usage by groups at risk of digital exclusion. According to the Riga Declaration member states agreed to reduce the digital gap by half by the year 2010 [4].

Current European policies of eInclusion devote specific attention to the information technology needs of people living with disabilities, elderly people, unemployed people and other so-called "at-risk" groups such as ethnic minorities.

eInclusion policies operate by using a wide range of measures, and policy-makers are keen to obtain objective feedback on the relative effectiveness of the various tools. As in other policy fields, this feedback information may take the form of indicators.

Since eInclusion is a recently emerging policy field, there are no existing systematic benchmarks, and no existing time series which could be used as baseline indicator values. There are some existing methods developed to measure the digital gap [5]. However, the scope of current Eurostat surveys does not allow a full analysis of ICT usage among the selected target groups such as the disabled and the immigrants. The general indicators of barriers and advantages of ICT usage as collected by Eurostat are just too broad for the selected target groups.

The ICT for ALL Project has been initiated by European academic and research institutions from five member states (Greece, Hungary, Italy, Poland and the UK) as an FP6 project. The aim of the project is to develop a set of indicators capable of describing the degree to which the social impacts of ICT reach a number of exclusion prone social communities, in particular disabled, unemployed, immigrants, and elderly people.

2. Methodology

The aim of the ICT for ALL project was to evaluate survey instruments such as questionnaires and sampling strategies for the measurement of eInclusion. To achieve this, a Pilot Survey was conducted in the participating five countries, covering all four target groups of eInclusion policy in each of these countries. Altogether there were 1019 responses from the five participating countries.

There was no systematic representative data sampling used in the Pilot Survey. Instead the sampling followed the principle that the four target groups and the five countries are equally important. Thus, the sub-samples did not reflect the size of the respective sub-populations, but in each country, every target group was represented by a sub-sample of approximately equal size. Besides, within each country there was an effort to reach a possibly wide range of various socio-demographic groups in case of each sub-sample. In other words, the social variability of country-level sub-samples was to be maximized in terms of representing genders, settlement types and education levels.

All research partners from the different European countries reached more than 50 people from each of the four target groups, which is enough for an extensive test of the questionnaire. The results of the Pilot Survey are used solely for the purpose of validating methodological considerations on indicator development and may not be interpreted as a valid assessment of the digital inclusion of the target groups.

ICT for ALL project also conducted an Expert Survey on eInclusion of Groups At Risk of Exclusion. The experts evaluated the preliminary Questionnaire of the Pilot Survey and provided information about the measurement of eInclusion in different member states.

3. Overview of European eInclusion Data Collection Practices

All five contributing partners wrote a country report including the availability of statistical sources pertaining to aspects of ICT use in the four target groups. According to the reports from the five EU member states, the unemployed and the elderly were the two groups most generally covered by ICT statistics. In each of the five countries there was at least one representative nationwide survey that offered data about these groups, as well as one or more special reports focusing on each target group.

With the exception of Hungary, statistical sources are also available about disabled. However, only basic statistical information is available on a regular basis, such as proportion of computer ownership, internet access and usage of the disabled. There are also scattered sources about digital literacy within the group of disabled people. On the other hand, usually special reports were made about the ICT usage of this target group.

In four of the five participating countries there was no data collection about the ICT usage of immigrants at all. The only exception was Italy where the statistical institution collects data on immigrants' basic ICT usage.

In the ICT4ALL project experts from 22 European countries were also asked to supply information about the eInclusion data collection practices from all over Europe. Together with the five participating ICT4ALL countries (Greece, Hungary, Italy, Poland and the United Kingdom) all the 27 countries of the European Union were covered. ICT4ALL has received 18 responses from the 22 EU experts, and detailed information.

In most European countries a single national statistical institution is responsible for eInclusion statistics. There are some countries (i.e. Bulgaria, Czech Republic or Spain) where different ministries are responsible for parts of the data collection, while in Portugal some governmental organizations provide information about the ICT usage of the four target groups. Usually the experts reported about the involvement of the academic sphere in researches focusing on eInclusion. These surveys are mostly supported by the government.

The ICT access and usage of the four target groups are covered differently. Similarly to the five ICT for ALL countries there is detailed information about older people and the unemployed collected on a regular basis in other EU member states. However, these data do not perfectly cover the indicators suggested by the ICT4ALL project. In the case of the disabled, usually there are some focused researches; however this target group is not measured on a regular base. The range of data available in different EU countries has a great variety. The most problematic target group is the immigrants. Almost none of the EU countries covered by ICT4ALL expert questionnaires have ICT specific research focusing on immigrants. Probably the only exception is Estonia, where the ICT usage by immigrants will be measured for the first time in 2008. This data collection will be carried out as part of the Estonian Labour Force Survey.

4. Lessons Learnt from Pilot Survey

As stated above the results of the Pilot Survey are used solely for the purpose of validating methodological considerations on indicator development. In other words the numerical results of the Pilot Survey are not a valid tool for evaluating the level of eInclusion in the participating countries. There will be no systematic presentation of numerical results from the survey. The aim of this chapter is to draw the lessons learnt from the pilot with respect to reaching the target groups and formulating the wording of questions.

Of all four target groups of the ICT for ALL project immigrants and people with disabilities have proved particularly difficult to reach. Consequently, during the data collection of the Pilot Survey all partners tried to reach the target groups via institutions specialized in supporting the disabled, the elderly, the immigrants or the unemployed. Our results indicate that this approach to reaching respondents could lead to serious distortions

in the sample. For example in the Pilot Survey respondents using computers and internet were regularly highly overrepresented. A comparison with representative national surveys shows clear evidence of this, as presented in the table below.

Table 1: Percentage of Individuals Who Used a Computer in the Last 3 Months

	Eurostat ICT survey 2007*	ICT for ALL Pilot Survey 2007			
		People with disabilities	Immigrants	People aged 65 and more	Unemployed (registered)
Greece	40	68	82	68	10
Hungary	58	68	77	33	83
Italy	43	77	60	49	89
Poland	52	28	50	32	68
United Kingdom	78	64	78	45	75

* "Community survey on ICT usage in household and by individuals".

In some countries unemployed people as well as the elderly were more likely to use a computers in the last three months then the general population. From other researches it is proven that these target groups tend to use ICT less regularly. While a possible explanation may be that in the Pilot Survey respondents were reached through institutions which themselves promote ICT usage (i.e. organisations for older people and local unemployment offices), it should be stressed that careful attention must be paid to ensuring adequate representation in data collection.

The report from ICT for ALL suggests that the sampling strategy of a survey among members of exclusion-prone social groups must begin with collecting the available statistical information about the size and inner structure of these groups, as this kind of information is not readily available in several countries. Besides using the existing data of official statistics, attempts have to be made in order to use:

- eInclusion country reports
- data of subordinated Government agencies, such as job centres
- data obtained from associations of the target groups
- data obtained from civil organizations offering support for the target groups
- and results of previous survey-based scientific research.
  The results of the Pilot Survey were also analysed along a set of criteria:
- The coherence of the data were compared with other results from national reports as well as estimation by experts.
- The credibility of response statistics to each question was studied in the light of the distribution of responses, specifically low levels of admitted use.
- For questions with a high amount of missing values, the clarity of wording was studied.
  Using the criteria presented above all questions were evaluated and some of them were changed or discarded from indicator creation.

5. Indicator Development

As the ICT for ALL working paper describes [6], indicators are assessment tools, indirect measures of broad concepts which cannot be measured directly. They quantify phenomena in order to help to understand complex realities and to facilitate the planning and development process of policies.

A methodological paper was written before designing the questionnaire for the Pilot Survey. This paper introduced two types of indicators. Gap Indicators compare the summary value (e.g. proportion of people having access to Internet) of a variable as applied for the general population with the respective summary value of the same variable within a specific target group of eInclusion. Thus, gap indicators are always based on indicators already used within the wider population. On the other hand, target group sensitive indicators are interpreted only in the context of a special target group. An example at hand is the access to special software designed for the blind. These indicators can express barriers and opportunities that appear only in case of a specific target group.

Combining the evaluation of indicators with the conceptual framework of eInclusion, a composite indicator was introduced. Composite indicators are based on sub-indicators that have no common meaningful unit of measurement and there is no obvious way of weighting these sub-indicators. [7] According to the OECD definition "A composite indicator is formed when individual indicators are compiled into a single index, on the basis of an underlying model of the multi-dimensional concept that is being measured." [8]

Based on a model of technology acceptance, ICT for ALL suggests a composite indicator which was named AWAKE [9]. It illustrates the steps of adopting information and communication technologies which may apply to a special group prone to digital exclusion.

In the first phase the group learns about the new technical possibility ("Awareness"). In the second phase the intent and need develops for creating the conditions of accessing and using the new technology ("Want"). In the third phase group members obtain necessary hardware and get access to the services ("Access"). In the fourth phase people improve their knowledge to use the new technology ("Know-how"). Finally, in the fifth phase the group utilizes these services to improve its quality of life, to get equal opportunities in work, consumption and leisure, i.e. by using new media the group enters those forums and sites of mainstream society from which they were previously excluded ("Enter").

Sub-indicators included in the composite indicator AWAKE may be illustrated by:

- "Awareness" indicators express the extent to which members of a group know about those goods and services that ICT can offer for them. Example: "Percentage of disabled people having heard of web pages for people with disabilities."

- "Want" indicators express the extent to which members of a group intend to use new technologies, the importance they attach to ICT facilitated work, consumption and leisure. Example: 100% minus the "percentage of people who either don't want Internet access (because the content is harmful, etc.) or don't need Internet access (because it is not useful, not interesting, etc.)".

- "Access" indicators express the extent to which certain groups have access to general and specialized ICT equipment and ICT based services and to what extent they are making use of their possibilities. Example: any indicator of accessibility.

- "Know-how" indicators show the possibilities of social groups to participate in ICT related training and education, and the level of digital literacy of these groups. Example: "Percentage of people capable of creating their own website"

- "Enter" indicators show the extent to which social groups participate in ICT facilitated work, consumption and leisure activities similar to those of the general population (e.g. "Percentage of disabled people who have worked regularly as a distance worker".

The AWAKE indicator set may contribute to a better understanding of the European level of eInclusion in certain areas. If the indicators meet the attention of European decision makers, a regular, representative data collection can eventually take place.

Calculating the "ICT for ALL" Composite Indicator

Weighted Averaging Algorithm. The "ICT for ALL" Composite Indicator contains 12 types of indicators multiplied by the four target groups. The indicator can be calculated with the following weighted average algorithm:

- Weight by size of target group = size of target group / sum of sizes of all target groups served by the Indicator.
- Weight by type of indicator = 1/12 for each indicator.

Interpretation of "ICT for ALL" Composite Indicator goes as follows:

- High. If the value of "ICT for ALL" Composite Indicator is 100 or not much less than 100, than this means perfect eInclusion performance of a country.
- Low. On the other hand, if the value is 0 or near 0, this means that in that country information and communication technology have to be used to include exclusion-prone communities into society.

6. Conclusions

In this paper an overview of the ICT for ALL indicator development was presented. The suggested set of indicators follows the phases of how a social group may reduce the digital inequalities and use technology to gain social inclusion.

The overall project contributes to the dissemination of knowledge to national and EU stakeholders on the ICT indicators for the exclusion-prone communities and to policy instruments and technology amendments, so that any observed exclusion may be removed leading to a gradual removal of the obstacles that the exclusion-prone communities currently face in enjoying the social benefits of ICT.

The data for indicators suggested by ICT for ALL are not fully available in almost any of the responding countries from various EU member states. There are some efforts to design a common base for measurement of eInclusion in Europe, but the amount of comparable ICT statistics about the target groups is still very limited.

The Riga declaration has set clear aims for the EU member states (as well as for some other countries). Progress cannot be evaluated without proper measurement. It follows that a baseline data collection should be carried out. A common methodology for measurement has to be used in all participating countries in order to utilize the opportunities of international comparison.

It clearly follows from the above that the European statistical system has to be improved if the European Union wants to monitor the process of halving the digital divide in line with the Riga declaration. Otherwise there will be no data supporting policy decisions regarding the target groups prone to digital exclusion.

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