



Public policies based on social networks for the introduction of technology at home: Demographic and socioeconomic profiles of households



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ABSTRACT

The promotion of the use of Information and Communication Technologies (ICT) among the population has been shown as an important matter of public policy to avoid the digital divide. In this paper differences in the impact of ICT in households are analyzed, and main demographic characteristics are considered. Based on the ICT Development Index (IDI), proposed by the United Nations, a regional index (RID) is developed to evaluate the comparative impact on different Spanish regions. Subsequently, the regions are grouped through cluster analysis, based on indices measuring their ICT development. Household characteristics were examined by calculating a discriminate regional index (DIRIDI). It is composed of highly disaggregated indicators concerning socio-demographic characteristics of households and municipalities, and only those which have shown to be different between regions have been selected. The results indicate a strong polarization in the development of ICT, favorable to Mediterranean and Northeast areas, for both indices calculated. The differential profiles of households point to household size and municipality as well as the age of household members. It highlights the usefulness of designing general policies for particular types of homes, combined with different regional policies, taking into account the benefits of the social networks and collaborative learning.

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1. Introduction

The digital divide is a new source of inequalities and poverty (Korupp & Szydluk, 2005). The most underprivileged people are those usually falling into this form of deprivation (Barreiro-Gen, Novo-Corti, & Varela-Candamio, 2013; Piaggese & Castelnovo, 2012). The divide is a source of rising inequalities which complicates social welfare. National and international authorities have expressed concern about this problem. Such is the case of the United Nations or the European Union (COM, 2010; International Telecommunication Union, 2013). Therefore, reducing the digital divide is a clear policy objective. Achieving a reduction in the digital divide requires appropriate policies and therefore an exact knowledge of who should be targeted (Knoepfel, Larrue, Subirats i Humet, & Varone, 2008). Specifically, policies must know what

households are lacking or else we risk further exacerbating the digital gap. By simply knowing exactly the type of people and hence households to which policies should be addressed, those policies should be expected to be successful (Turk & Trkman, 2012). It is also important to take into account the specific characteristics of ICT's Use, as networks externalities arising from it, because each individual's demand of ICT's Use depends on the purchases of other individuals: the quantity demanded by, for instance, a household, increases in response to the growth in purchases of others households. Social network websites provide a good example of network externalities, because if one person is the only member of that site, it will have no value for him/her. But the greater number of users who join the website, the more valuable it will become (Pindyck & Rubinfeld, 2013). Therefore, public policies based on social networks become important, as a method in which feedback are the key factor (Prince, 2004), and, at the same time, those policies are helping to increase the positive network externalities, which are usually linked to technological standards (Heinrich, 2014).

On the other hand, it is necessary to know to what extent this digital divide is presented, that is to say, a measure of the digital

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divide is needed. The IDI is a measure widely used, proposed by United Nations (UN). It is the basis from which this work is drawn.

Having explained the concept of digital divide and how to assess it through the ICT Development Index, the question to which it is responding to this research has been stated: what factors should influence public policies to promote household digital inclusion? What are the determinants of IDI and, as a result, of the digital divide and exclusion? Should public policies target a particular household type?

The main scheme of this work responds, according Fig. 1, as follows: firstly, the IDI of all Spanish regions is calculated, on basis of adaptation of the United Nations IDI. It is called Regional ICT Development Index, and a statistical cluster analysis is run, for grouping regions attending their ICT development. Two groups were found. Then, with the objective of deepening in the components of RIDI, the indicators used for its calculation, are disaggregated at a very high level. A mean differences statistical analysis was run and it showed the particular items pointing differences between the two regions groups. Once this differences are located, are selected and a new RIDI is calculated, now taking only account those items which have shown differences. It is called Discriminating ICT Development Index (DIRIDI). Finally, a new clustering statistical analysis is undertaken, for grouping regions again, in basis of the DIRIDI values. The last step was to analyze and compare both clustering results.

2. Digital divide and public policies

In this paper, the digital divide is understood, according the European Union, as “the gulf between those parts of the population that have access to the Internet and other digital technologies, and those sections of the population that do not. There is concern that as so many services (both commercial and governmental) become available online, groups without digital access (caused by, among other things, high cost, lack of skills, location or a combination of these) will be left behind, and miss out on opportunities in life and in work” (European Union, 2010).

The lack of use of ICT is a failure for both the welfare of the population and for the economic development of society. Moreover, the digital divide has a clear component of inequality. Public policies promoting the use of ICT arise with the target of facing both issues. Moreover, these policies are addressed to people who live in homes. Thus it is important to study the various types of households and dwellings. Since this paper deals with Spanish Autonomous Communities, household is considered as a group of people living in the same family home, according the Spanish Statistical

Office (Spanish Statistical Office, 2013b). Family is considered a group of people, living in the same family dwelling (thus forming a household), linked by ties of kinship, whether blood or marriage, and regardless of grade. The differences between home and family are that the home may be individual, while the family must consist of at least two members, and that the members of a multi-person household do not necessarily have to be related, while family members are related (Spanish Statistical Office, 2013b). Thus, the concept of household that is used here is the home-dwelling, which does not require sharing some common expenses to determine the membership of persons to such a household.

Modern societies have to face new causes of social inequality like the digital divide (Korupp & Szydluk, 2005). The impact of this gap is the starting point for being aware of the need for new public policies to solve this problem. For achieving this goal, the problem has to be visualized and affected groups should be taken into account.

A social problem like this becomes a public issue only after its inclusion in the political agenda (Knoepfel et al., 2008). In this case, the problem of the digital divide has been included in different political agendas around the world. For instance, the European Union has elaborated the Digital Agenda for Europe: Europe 2020 (COM, 2010) containing seven flagship initiatives to achieve smart, sustainable and inclusive growth. One of them is the Digital Agenda, which includes priorities such as the creation of a new and stable broadband regulatory environment, or new public digital service infrastructures.

Another example of political interest in this issue is the performance of the United Nations, through the International Telecommunication Union (ITU). ITU has a specially designed index related to ICT development, which was used in this research (International Telecommunication Union, 2013).

Despite all the efforts of various organizations, some studies have recommended to focus on groups with special difficulties in this area, taking into account the need to aim public policies at particularly weak groups. According with Turk and Trkman (2012) whether policies fail to focus on these particular groups, 100% broadband will not probably be achieved.

According to EUROSTAT, ICT have become widely available to the general public, both in terms of accessibility as well as cost (EUROSTAT, 2014). In terms of ICT access, an important milestone was achieved in 2007, when a majority (55%) of households in the EU-27 had Internet access. This percentage continued to increase (reaching to 73% in 2011), increasing three percentage points with respect to 2010. Broadband has been by far the most common form of Internet access, in all Member States. It was used by 67% of all EU-27 households in 2011, more than double the share in 2006.

In terms of ICT skills, in 2011, a majority of individuals in the EU-27 had some basic computer skills (so that they were able to copy or move files or folders), particularly the youngest people (63% of persons aged 16–74 and 89% of those aged 16–24). 43% of the population used basic arithmetic formulae in spreadsheets were (aged from 16 to 74) and 31% created electronic presentations. The proportion of persons aged 16–24 with these computer skills was much higher (EUROSTAT, 2014). So, the main aspects to engage the use of ITC are related to technical and economic access, and the skills or knowledge (see Fig. 2).

The basic issue would be, precisely, determining which are the households and the individuals without access (due to technical or economic reasons) and/or those lacking basic skills to use ICT so as to show the importance of analyzing the particular characteristics of households in order to design specific policy measures.

Certain proposals take in account not only ICT access, but also the different use of new technologies and what happens at home, based on a multidimensional study (Stevenson, 2011). In this regard, other studies showed the importance of demographic and

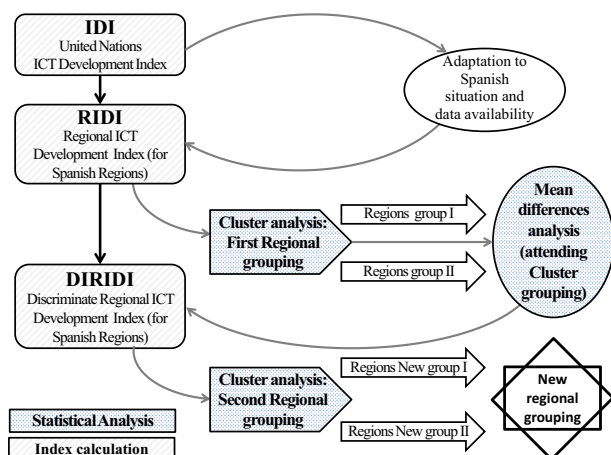


Fig. 1. ICT Development Index and cluster analysis for grouping regions.

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