

Mobile Communication and Digital Inequality

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Abstract

The use of new information and communication technologies (ICT) can help improve people's lives in regards to social interaction, access to information, and the use of online services aimed at such simplification. With this study, based on micro data from an Italian survey on the use of ICT by families and individuals relating to the period 2006-2016, the following research questions are intended: how is the use of ICT currently characterized in Italy and what changes have occurred in the last decade? Can mobile telephony, and in particular the smartphone, be considered digital inclusion drivers, especially for traditionally disadvantaged segments? The first part of the work analyzes, by means of a logistic regression model, connections between the first-level digital divide and socio-demographic and territorial characteristics of the Italian population aged 16-74. Subsequently, second-level digital divides are analyzed by relating the different devices used to connect to the Internet and digital skills. Particular attention is paid to use of the smartphone and associated digital skills.

Key words digital divide, digital skill, smartphone.

Introduction

Several studies have highlighted the impacts of digital transformation on personal well-being. The use of new information and communication technologies (ICT) can improve people's lives with regard to social interaction, access to information, and the use of online services oriented to such simplification (Castellacci, Tveito [2016](#), Dibyendu, Awasthi [2019](#), Pierewan [2014](#)). On the other hand, digital technologies can be a factor in the increase of inequalities in the population, since they introduce digital gaps linked to both access to these technologies and their use (Mingo, Bracciale [2018](#); Hargittai [2003](#); Hargittai e Hsieh [2013](#); Hunsinger [2010](#); van Dijk [2009](#); Zillien and Hargittai [2009](#)).

In order for digitalisation to have a positive impact, initiatives aimed at increasing access levels (reduction of the first-level digital divide) and developing skills in the use of ICT (reduction of the second-level digital divide) are needed.

The dissemination of ICT is part of the European Union's policy on social and cultural inclusion and is one of the objectives of the Europa 2020 strategy launched by the European Commission in 2010 in the context of the counter-cyclical measures developed in response to the financial crisis of 2008. The European Parliament and the European Council set out certain digital competences among those considered essential for personal fulfilment and development, social inclusion, employment and the exercise of active citizenship.

In the last ten years, there has been a rapid spread of the Internet thanks to mobile technologies that have made it possible to connect at any time and in any place through a variety of devices. In 2016 internet users in EU countries reached 79% of the population aged 16-74, with an average increase of 34 percentage points. In Italy, users have increased from 31% to 67%, placing them at the bottom of the ranking of EU28 countries. With this study, based on micro data of a community survey on the use of new technologies by families and individuals, conducted in Italy by the National Institute of Statistics (Istat), we intend to analyze changes in the first-level digital divide that occurred between 2006 and 2016 with reference to various socio-demographic and territorial segments of the population. For 2016, the year for which the necessary information is available, we have attempted to answer the following research questions: how is use of the various devices used to access the Internet (personal computers, tablets, smartphones, etc.) in the different segments of the population characterized? Does the introduction of new devices reduce digital inequalities? Can mobile

telephony, and in particular the smartphone, be considered digital inclusion drivers, especially for traditionally disadvantaged segments?

Data and methods

The study builds on micro data from two different years (2006 and 2016) of the Italian Survey on information and communication technology (ICT) in household and by individuals. The survey, which is carried out by Istat on annual basis within the broader “Aspects of daily life” survey, is part of the European Community statistics on the information society establishing the legal basis for harmonized statistics on ICT usage in household and by individuals (Commission Regulation No 808/2004). The survey is carried out on probability sampling design of approximately 24,000 households and 50,000 individuals.

In addition to the socio-demographic characteristics of individuals (e.g gender, age, education, Employment situation, Family economic source, etc.), the survey also collects information on the following aspects: access to selected ICT technologies, use of computers, frequency of use, activities, use of the Internet, internet, e-skills, the mobile use of the Internet

The concept of digital divide has been operationalised by referring to two dimensions: access and digital skills. As regards access (first level digital divide), two classes of indicators have been defined, the first based on the frequency with which the internet is used, the second on the number and type of devices used to access to internet. Three types of users have been identified on the basis of frequency: general user is a person who has used the Internet at least once in the three months preceding the interview; regular user is a person who has used the Internet at least once a week; heavy user is a person who has used the Internet every day.

The information on the devices used to connect to the Internet was collected for the first time in the survey of 2016, through a multiresponse question with five response mode. The multiresponse question was used to create a new "device" variable with eight response modalities that take into account both the number and the type of device.

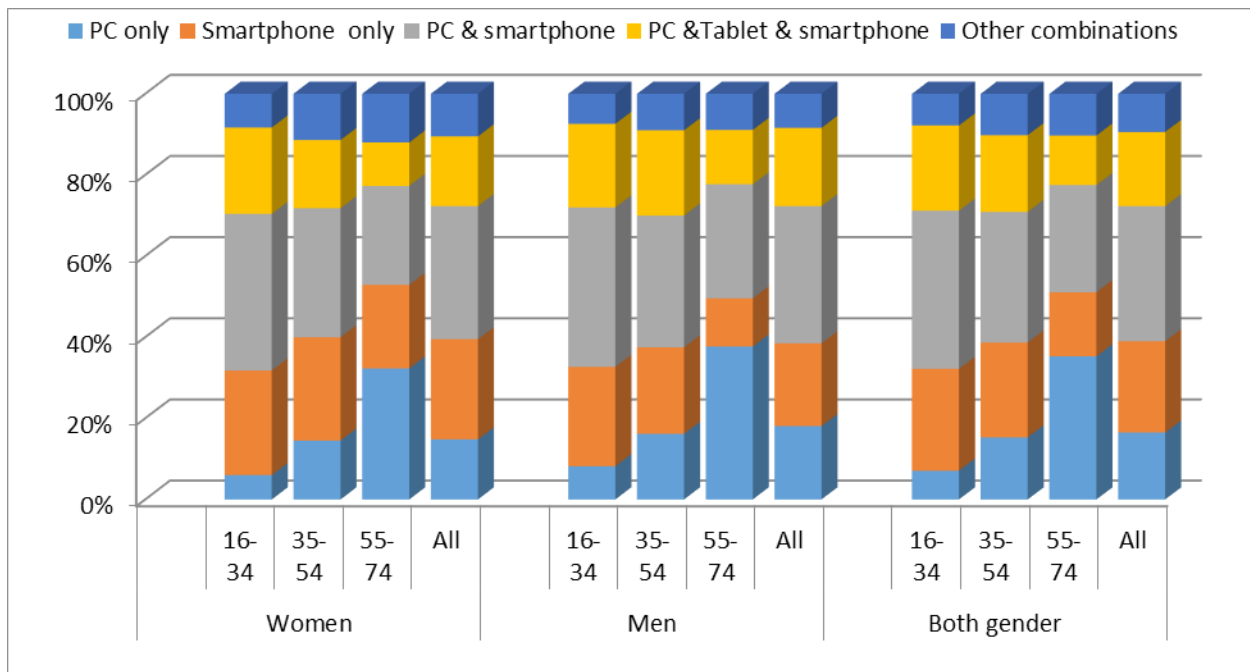
Digital skills (second level of digital divide) are identified in line with the Digital Competence Framework developed by the European Commission in collaboration with national statistical offices. The framework identifies 21 competences organised in four domains: information, communication, content creation, and problem solving. Information about activities realized by the respondents during the previous 3 months in four of these domains are collected by the survey. Thus, we select a set of activities that reflect the competences outlined within each domain of the framework (with a minimum of 4 and a maximum of 7 activities selected). Hence, based on the information on the activity performed, for each respondent and for each of domain the following three levels of digital skills are identified: 0= none digital skill ,1=basic, 2= above basic. Once these three levels of skills are computed for each of the four dimensions, an overall composite indicator is computed following a similar logical approach.

Our particular aim is to investigate whether and to what extent the use of specific devices associates with digital inequalities related to both first and second levels digital divides. A particular attention will be given to the use of the smartphones. Our specific aim is to evaluate if the use of the smartphone can be considered a driving force in the adoption of new technologies and, thus, reduce the digital inequalities among individuals and households. Taking into account the hierarchical structure of the data (territory, individuals), the analysis is carried out using a multilevel approach. Our dependent variable is the rate of utilization of smartphone by regular internet regular Internet users. The first level units consist in the area of residence of the individuals, information in this regard comprise: demographic amplitude, metropolitan area, region classified according to the degree of development, etc. Second level units are individuals for which we include regarding the main socio-demographic characteristics such as sex, age, educational qualification, and employment status.

Descriptive findings

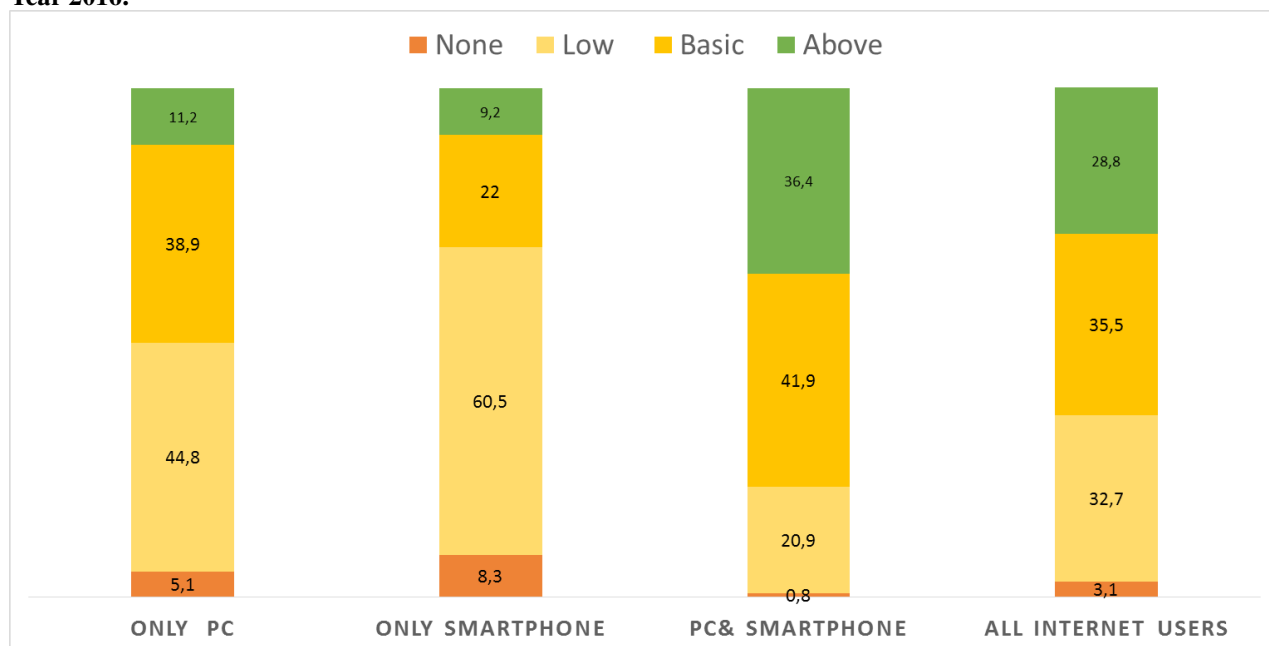
Descriptive findings provide a first empirical evidence of the relationships existing between the utilization rates of the different devices by regular Internet users and some of their "structural" characteristics such as gender, age, level of education, professional status, position in the profession, frequency of use of the Internet. As shown in Fig. 1, the choice of the device used to surf is characterized by generational specificities. Young people up to the age of 34 are more likely to combine the use of PC and mobile phone, although almost a quarter of individuals in this age group exclusively use the smartphone to access internet. By contrast, the exclusive use of the PC prevails among population aged 55 and over. The use of multiple devices is more widespread among men, as well as the exclusive use of the pc (which is particularly widespread after age 55). Women prefer, instead, the exclusive use of the mobile phone and this trend is particularly evident among internet users aged 55-59, for whom, moreover, the share of those accessing the network is lower.

Figure 1 – Individuals regularly using the internet by kind of device and age group (percentage values). Year 2016



Looking at the relation between the different devices and digital skills highlights that advanced skills are more common among individuals using multiple devices (figure 2). The result holds for all the four digital competence domains. However, differences among generations persist also for multiple-device alliterates: the higher competences are found among young people while gains are lower for older age groups. Internet users reporting the exclusive use of smartphone show the greatest disadvantage in terms of digital skills: 8.3% highlight no digital skills and 60.5% had low digital skills (with corresponding values of 0.8% and 20.9%, respectively, for those using multiple devices). Finally, individuals accessing internet only through their pc where can be distinguished in two main groups: those with low and those with basic digital skills (44.8% and 38.9%, respectively)

Figure 2 – Individuals aged 16-74 years regularly using the internet by level of digital skills (percentage values). Year 2016.



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