

INTERNET DIFFUSION AMONG ITALIAN FIRMS: KEY FACTORS DETERMINING THE DIGITAL DIVIDE

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Abstract

Introduction

Internet growth has captured the imagination of users, policymakers, entrepreneurs, corporate managers, military strategists, social commentators, scholars and journalists (Guillèn & Suarèz, 2004). Internet is seen by some researchers as a new technological means that will lead to a “smaller, more open world” (Tapscott & Caston, 1993). According to some researchers Internet symbolizes “the triumph over time and space” the rise of the “netizen”, and the crowing of the “customer as sovereign” (Gilder, 2000).

Our study analyzes the spread of Internet among Italian firms utilizing the number of domain names registered under the country code Top Level Domain (ccTLD) “.it” as a metric. We took into consideration domain names (names that are associated to IP addresses in the net) because, today it is very important for a firm to have a domain name, as through this name it can exploit the above mentioned direct and/or indirect advantages. Moreover, it is helpful for a firm to register a domain name not only to have its own web site, but also to benefit from the advantages related to on-line means of communications (for example e-mails, FTP and so on).

In this paper we analyze the factors contributing to the existence of a digital divide in Italy, taking into consideration not only economic variables, but also educational, cultural, demographic and technological variables.

Methods

Several metrics are available for measuring Internet diffusion. The most convenient are the so-called endogenous metrics which can be “obtained in an automatic or semiautomatic way from the Internet itself” (Diez-Picazo, 1999). These metrics have the undeniable advantage of the accuracy, being based on automatic data collection and retrieval; in addition they allow a good geographical characterization of the phenomenon being based on data that allow differentiation of users on a national, regional and provincial level.

Approximately 1,000,000 domain names were analyzed and grouped into several categories (individuals, firms, universities, associations, public groups and other registrants). In this paper particular attention, was paid to the registration of domain names by firms.

Results

To measure the digital divide among Italian regions (Italy is divided into 20 regions) we utilized as metrics the number of domain names registered by firms under the ccTLD “.it”, the penetration rate calculated every 100 firms and the Gini index (Gini, 1960).

Results show that a digital divide exists in terms of geographical distribution (i.e., in macro-areas – Northern, Central, and Southern Italy - and at the regional level) and in terms of the legal status of the firms.

The study has also attempted to discover the factors that can determine the presence of the digital divide in Italy at a regional level. With that intention the stepwise regression was utilized taking

into account as dependent variable the penetration rate and as independent variables economic, cultural, educational demographic and technological indicators.

The analysis show that not all the variables are significant.

As a matter of fact, some of the variables analyzed proved to be scanty significant and have been removed from the models observed. For example in the model that takes into consideration economical indicators as dependent variables, the only significant economic variable that better explain Internet diffusion among Italian firms is the added value per employee. The rest of the examined variables such as total income, the number of patents in proportion with the number of firms and per capita income have been removed from the equation of the stepwise regression line as scanty significant.

The econometric analysis besides shows that the indicators related to education, in particular the number of firms specialized in the ICT services sale, substantially contributes to the existence of the digital divide among firms that have their head offices in a given region and, as economic literature suggests (De Arcangelis et al., 2002), also the number of employees devoted to research and development becomes a crucial element.

Although the model that takes into consideration IT investments made by regions, proves to be significant, the adjustment degree of the model is not very high. The relation between the penetration rate and the technological indicator even if it is positive and significant proves to be inferior than the educational and cultural indicators. This result is not in line with some researchers: Chen, Boase e Wellman 2002, and UCLA, 2000, 2003, for example, they find that in addition to income, access costs are strong predictors of Internet use.

Conclusion

We identified in our research not only the factors contributing to the existence of the digital divide, but also, analyzing data, we observed the presence of a serious issue: Italian regions with a low economic development and regions with a wide unemployment appear to be underdeveloped even from a technological point of view.

In the first instance Internet could be a pervasive phenomenon justified by the decentralized, non-hierarchical, immaterial nature of the Internet technology (Negroponte, 1995), which in principle should not have strong barriers to entry as it happens in manufacturing. This means that everyone in Italy could use the Internet to exploit its potentials seeing due to its low access costs.

Data show that this effect does not take place at all at a provincial level. Domains are even more concentrated than the number of firms and income. A ranking of provinces by penetration rate, shows that the distribution of Internet follows large differences in the level of income: even if some provinces have a high number of firms and high income, not always they are also the first in terms of registered penetration rate. Our preliminary conclusion is that the research indicates that the Internet sharpens the digital divide, rather than being an equalizer. Future research will be dedicated to verifying if those who are more inclined to use the new technology today, in the future will reach a first level of saturation, and the network will also spread among those who are disadvantaged in terms of accessibility and costs.