

Benchmarking Transformational Use of ICTs: The Role of Social Capital

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Abstract: ICTs open up radically new ways in which to address the basic challenges of regional development in the Knowledge-Based Society. The transformative potential of ICTs resides, in particular, in the way they enable networking, learning and innovation, and empowerment. A horizontal theme that runs through all of these is social capital. A growing body of evidence suggests not only that strong social capital contributes to diffusion of ICTs within a region, but also that uses of ICT can produce social capital. Because of the central importance of social capital to a region's ability to achieve progress, indicators on networking and on other types of interlinkages should be included in EU benchmarking at regional level.

1. Introduction

Developing the knowledge-based society (KBS) in the regions of Europe is seen as a central component in realising the goals of the Lisbon Agenda with regard to competitiveness, growth, employment, social cohesion and inclusion. It is increasingly accepted that bringing about an KBS will not be achieved by the market alone, but that policy intervention will be required in a number of areas – especially if the goal is to develop a KBS in which all participate in line with their needs and abilities [9].

In order to intervene effectively to enhance social inclusion and to overcome the digital divide, however, it is necessary to understand the factors which explain the way that certain individuals, organisations and regions engage or fail to engage in the KBS. To do this systematically, and over a period of time, quantitative indicators are needed. They should focus not only on supply and uptake of technology per se, but also on the purposes for which technology is adopted, by which types of people, organisations and regions, and with what degree of success. In particular, indicators are required which allow us to explore how technologies are being used in *transformative* ways, i.e. in ways that go beyond increases of efficiency but involve finding new, more effective ways to achieve the underlying objectives of regional social and economy development. This relates to the well-established distinction between readiness, intensity and impact/outcome indicators, the choice of which needs to be taken according to the level of diffusion of the innovation in question [30].

A number of benchmarking mechanisms have been put in place in order to monitor the progress towards the KBS in the European Union [10]. The development of indicators to benchmark the KBS, and their implementation in the European Statistical System mark a significant step in the evolution of European policy. Research has also started to create indicators on the "softer", but arguably more relevant KBS issues such as the purposes for which ICTs are used, perceived and real impacts and outcomes, facilitators and barriers. Most of these initiatives, however, suffer from a lack of theoretical foundation. Moreover, for the purpose of benchmarking European regions' success in building up a KBS, the indicators developed to date have a number of limitations. First, they remain overwhelmingly technology focused. They relate principally to the supply of and demand

for ICTs and selected electronically-delivered services. Only in some cases are these supplemented by other indicators setting out the purposes for which technologies are used. Even here the indicators are usually not informed by current scientific knowledge of the determinants of (regional) social and economic development. Second, they tend to reflect an assumption that ICTs will automatically lead to (a certain type of) economic and social development. However, we do not know that this is the case and the indicators developed to date in order to monitor ICT take-up are not sufficiently sophisticated to allow us to test this. Third, although the i2010 strategic framework acknowledges that ICTs do not diffuse uniformly across all regions and socio-demographic groups and that e-inclusion and the regional digital divide is a concern across Europe [9], the ongoing benchmarking exercises barely address the issue of regional imbalances, even within the context of the narrow technological approach outlined above. Only in the case of individuals' access to and use of the Internet are sub-national differences considered at all, and this is confined to differences between Objective 1 and non-Objective 1 regions [10].

Finally, while academic research and the policy debate have recently started to embrace the notion of social capital and its role in the KBS (see below), coverage of social networking and business-to-business networking has largely been missing from statistics. This is partly due by the elusiveness of the notion of social capital, which is hard to operationalise. Nevertheless, as I will argue below, the social capital literature offers valuable insights which help to explain why regions' performance in the KBS varies strongly, and why the ability to create interlinkages (ties) is one of the most important determinants of success.

2. Objectives of the Paper and Background

The purpose of this paper is to demonstrate the role of social capital for regional development in the KBS, and outline an approach towards inclusion of social capital in KBS benchmarking. The research was carried out in an ongoing project within the EU's 6th Framework Programme (TRANSFORM), which is looking into "transformative" uses of ICT by individuals, firms and governments in Europe. Transformation as a particular kind of ICT-enabled change has recently come to the fore in the public debate. What do we mean by transformative uses of ICT? By means of a broad literature analysis [13], it was possible – in spite of the overall rather elusive way the term is used – to identify a number of core characteristics of ICT-enabled, transformative change. "Transformative" is often understood as uses of ICT that open up substantially new ways for individuals, firms and governments to make progress in achieving their goals. In many cases, this refers to activities that would not have been possible without ICTs. In particular, three themes appear to be of key importance for the notion of transformative use of ICTs.

First, it appears that the transformative potential of the Internet, mobile telephony, etc. resides mainly in the way these technologies enable *network creation* at a scale and depth not possible before. The specific properties of networks (such as network externalities), in combination with the particularities of (digital) information goods when compared to tangible goods, imply that network creation is one of the main underlying principles for ICT-enabled, paradigmatic change.

Second, given today's volatile economic and technological environment, it is critical to recognise and react to emergent change through the ability to exploit new opportunities. This implies the key role played by *learning as a continuous, often collective process* embracing the entire population, and *innovation* (including social innovation) for transformative change.

Third, transformative use of ICTs, particularly at the level of individuals and communities, is often understood to be related to *empowerment*. The European Commission [9] defined empowerment as "the process of granting people the power to take responsible

initiatives to shape their own life and that of their community or society in economic, social and political terms”.

A horizontal theme through each of the three dimensions is the notion of social capital.

3. Social Capital

In recent years, the notion of social capital has attracted much interest in public debate, in particular strategies for fostering economic and social development in the KBS [7][29]. The European Council passed a “Resolution on Social and Human Capital” in 2003 [14].

Social capital is usually understood as “the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit. Social capital thus comprises both the network and the assets that may be mobilized through that network” [25: 243]. One of the key benefit of the notion of social capital lies in the way in which it shifts the focus of analysis from the behaviour of individual agents (individuals, firms, public agencies) to the pattern of relations between agents, social units and institutions [36].

There is the assumption that social capital has positive effects not only on those who “own” it, but also the community (region) at large (e.g [32]). This is mainly due to the externalities generated by social behaviour, which often have the form of network externalities [21]. High stocks of social capital in a region are associated with relative ease of the sharing of knowledge and expertise, with community building and social cohesion.

Apart from these positive effects, newer research has stressed that social capital can also have negative effects with regard to the ability to innovate [16] and to respond to complex, changing environmental conditions [33]. Huysman & Wulf [20] list the following potential problems in relation to networks which are characterised by strong social capital: “restrictions imposed on actors who do not belong to the network; a lack of perception concerning environmental changes outside the network; negative social dynamics within the network and a downward levelling of norms; a dependency on central actors and their loyalty toward the network; restrictions on autonomy and individuality resulting from demands for conformity; irrational economic behaviour due to a feeling of solidarity toward partners in the network; irrational economic behaviour due to personal aversion”.

To get a better grasp on possible positive and negative effects of social capital, it is necessary to distinguish between different types of social ties. An important distinction is being made between strong and weak ties, as originally suggested by Granovetter [18]. He famously proclaimed “the strength of weak ties” and pointed towards the increasing importance of weak ties for success in social and economic domains. The term “weak ties” might be misleading, as O’Brien et al. [28: 1046] point out: “The essential characteristic of [types of] social capital is not its weakness or strength but rather its extensiveness and inclusiveness”. To avoid such confusion, [38] proposes three types of social capital: *bonding social capital*, i.e. strong ties between like people (or organisations) in similar situations; *bridging social capital*, i.e. more distant or “weak ties” of like persons (or organisations); *linking social capital*, i.e. weak ties that reach out to unlike people/organisations, such as those entirely outside the community or in a different sector.

It appears that the relative importance of weak ties has increased at the same time that economic success is being based more and more on the success of inter-firm collaboration and international network-building [16]. This also relates to the increasing importance of tacit knowledge and its transfer in the KBS, and to the notion of industrial clusters [1].

4. Social Capital and ICTs

There is some evidence which suggests that bridging social capital, in particular, may be undersupplied in many EU regions. For example, Iyer et al. [21: 1017] point out: “In many

countries, both developed and developing, such [bridging] social capital is considerably under-provided and it has been argued that without such social capital, the opportunities for social exchange are lowered and the potential for destructive conflict is raised". For this reason, policy-makers try – more or less explicitly – to foster the creation and maintenance of social capital, and also voice concern when evidence occurs which suggests that (some) social capital is in danger of being eroded (compare the public debate about the conclusions from Putnam's work in the later 1990s/early 2000s; see [15]). Recent evidence from Finland suggests that regions which are suffering from peripherality and/or structural problems are also more likely to have much lower levels of weak ties compared to regions which are economically successful [27].

Against this background, the possibility to use ICTs to foster social and human capital building, as well as the risk that ICT-mediated human interaction may deplete stocks of social capital, have been discussed extensively. The original view was that communication through the Internet inhibits interpersonal collaboration and trust and, as such, would be detrimental for social capital [24][34]. However, almost all empirical evidence collected in the aftermath of these studies found that the Internet tends to strengthen existing social capital [4][22][37]. This research suggested that the Internet makes it easier and more effective to participate in all the traditional forms of social capital, and that it also contributes to overall levels of social capital. This is done often by people acting in self-interest, which as a result of network effects creates both individual-level and collective level social capital – intentionally or not. "The Internet provides more opportunities to activate resources and create new knowledge for oneself and others" [22: 334]. Internet users were found to be significantly more likely to have a sense of belonging to a social group than non-users (after controlling for demographics), even after controlling for a number of personal characteristics which can be expected to affect the dependent variable.

Indeed, a recent study by Pew Internet [3], which explored whether Internet users derive a personal benefit from the social contact-enabling characteristics of ICTs, found strong evidence that this is indeed the case. While the general pessimism expressed by Putnam [34] and others, therefore, appears to be unfounded, another observation by Putnam is still much debated: In his words, "anyone who thinks the Internet could restore social capital lost through other means is a wild-eyed optimist". In fact, quite some empirical research, including the study by Nurmela [27], suggests that ICTs are unlikely to create social capital and a sense of regional identity where these are undersupplied in the first place. Analysis of a major local ICT initiative, the Blacksburg Electronic Village, made Kavanaugh & Patterson [23] conclude that "social capital may turn out to be a pre-requisite for, rather than a consequence of, computer mediated communication".

There are other views, though. Katz & Rice [22] suggest, based on their own extensive research, that the Internet indeed also builds new forms of social capital, and that these new forms "are in many ways different and more powerful than the local, physical means of earlier areas" [22: 332]. This mainly refers to the new types of sociability enabled by the Internet [2] as well as by mobile ICTs [5]. For example, the researchers found that "those who tend to be introverted find their social contacts expanded via the information relative to their nonsurfing counterparts[...] This means that the "being an Internet user is itself a source of online sociability" [22: 264]. Newer research also indicates that the Internet offers immense potential for identifying and interacting with people who have common interests, as suggested for example by the proponents of the "virtual communities" notion. The current debate about what has been termed "Web 2.0" [2], which is being taken up enthusiastically by users [31], as well as likely future developments in mobile applications [35], point towards an increasing range of possibilities for Internet-based social innovations to transform patterns of sociability.

The reason for the diverging opinions about the social capital creating effect of ICTs

may be a confusion about the meaning of “community” and sociability. As Katz & Rice [22: 117] state, “any analysis of the relationship between new media or technologies such as the Internet and changes in the nature of and involvement in communities is naturally confounded with the changing conceptualization and reality of community itself”. Online community-building and socialising can only be properly interpreted as exacerbating a well-established trend in western industrialised countries, i.e. “a historical process of separation between locality and sociability in the formation of communities: new, selective patterns of social relations substitute for territorily bound forms of human interaction” [4: 116]. Changing types of social capital that are sought, certainly enabled by the Internet and other ICTs, has its root in the growing trend towards diversity of sociability patterns.

To conclude, little doubt remains that ICT can play an important role in strengthening established communities and stocks of social capital. It also appears clear that the degree to which use of ICTs can *create* social capital differs strongly between strong and weak ties.

(a) While diffusion of ICTs certainly benefits from strong ties (e.g. in the case of expatriate communities, see [13]), ICTs are *unlikely to create* bonding social capital mainly because of the difficulty to build trust in purely virtual environments.

(b) Diffusion of ICTs benefits also from weak ties as these provide gateways through which knowledge of innovations can diffuse, but ICTs are also *likely to create* bridging and linking social capital as they lower the costs for identifying and interacting with people or organisations with similar needs or interests.

What follows from this is that policy-making which aims to foster regional economic and social development should seek ways for exploiting the potential of ICTs to create and strengthen bridging and linking social capital in order to foster exchange of experience and knowledge diffusion. Today, however, little is known about the degree to which a region is equipped with sufficient levels of social capital, which also means that policy-making lacks the information which would allow it to take targeted action. Comparative measurement of social capital related developments is a key challenge for the European Statistical System.

5. Measuring Differences in Social Capital

Quantitative measures on social capital, networks and interlinkages tend to be undersupplied, as recent research into availability of indicators on “networkedness” and collaboration shows (e.g. [17][19][30]). This is not surprising given the complexity of the subject, and the risk of oversimplification which has become obvious during the public debate about the research of Putnam [34]. Is it feasible to construct statistical measures of social capital at the level of EU regions? Can ICTs role in strengthening social capital be made subject of a benchmarking exercise?

The difficulty in developing a benchmarking framework about social capital becomes obvious when considering the issue of trust, certainly one of its key components. As [26: 47] points out, “the notion of trust is often seen by researchers as the most difficult concept to handle in empirical research because of the diverse definitions of trust used in each discipline and the multitude of functions it performs in the society”. The same may be said about shared codes, language and narratives, which make up the cognitive dimension of social capital. When empirical research tried to assess levels of trust and the cognitive dimension of social capital using quantitative measurement, it faced difficulties (see for example [11]). For development of statistical indicators, therefore, it appears that the structural dimension is of most importance because of the more elusive nature of the cognitive and relational dimensions. Moreover, network ties and their utilisation can be interpreted as outcomes of the cognitive and the relational dimensions (i.e. a shared understanding and a feeling of trust are conditions for network building and maintenance), which means the extent and structure of networks may well be good proxies for these dimensions. There are reasons for making, therefore, interlinkages and networks – as agents

of social and economic transformations, and as expressions of stocks and investment in social capital – the main focus for benchmarking.

For measurement of social capital of *individuals*, an important contribution was made by the Pew Internet & American Life Project [3]. The authors conducted a survey on the relevance of the Internet for social networking and the ability to access help in cases of need. The researchers first established the size of the network of weak and strong ties for each respondent, before asking about the communication modes used for interacting with them. The questionnaire also included a module about the extent to which any of the weak and strong ties have helped the respondent with a number of activities (find a new job or a place to live; make major purchases, investments or financial decisions; help in case of major illness; help with renovations; decide who to vote for in elections). Also covered was the heterogeneity of personal networks of weak links. By correlating these variables with information about ICT usage patterns (and controlling for the influence of demographics etc.), the study was able to find evidence for positive association between Internet use and social network capital at individual level.

In order to progress from here, we now need to explore whether it is possible to measure regional differences in social capital related indicators, and whether these are associated with differentials in the uptake and use of (particular types of) ICTs. If it can be shown that such benchmarking produces valid results, comparisons across the EU territory could be used to identify regions likely to benefit from policy action (for fostering the uptake and use of ICTs for the creation of bridging and linking social capital).

With regard to social capital of *firms*, some progress has been made in measuring the extent to which implementation of ICT is embedded within structural changes in business processes aiming at increasing depth and effectiveness of inter-firm networking and collaborative modes of production [6][30]. These activities are subsumed under “e-business”. Little statistical measures are available for mapping less formal types of networking by firms. This is partly caused by the difficulty of identifying a suitable observation and reporting unit for interview research, as not only one but all a firm’s staff members are engaged in networks of relationships. It appears that qualitative and in-depth case study research is better suited for this purpose, which puts the issue outside of the scope of benchmarking using policy indicators.

Indicators on social capital building by decision-makers within *local/regional government* have hardly been considered yet at all. This would be an interesting area for future indicator development, as inter-regional and intra-regional network building for the purpose of exchange of practice and institutional learning are bound to grow in importance in the KBS. Such network-building is also an established target of EU funding (through the Structural Funds), which makes the availability of policy indicators for purposes of evaluation and benchmarking all the more relevant.

6. Conclusions and Outlook

ICTs open up radically new ways in which to address the basic challenges of regional development in the knowledge-based economy and society. The transformative potential of ICTs resides, in particular, in the way they enable building and maintaining of network capital; continuous and collective learning and innovation; and empowering people in their roles as citizens, workers and consumers. A horizontal theme which runs through all of these is social capital. A growing body of evidence suggests not only that strong social capital contributes to diffusion of ICTs within a region, but also that uses of ICT can create social capital. The latter seems to apply only, however, to so-called weak ties, better described as linking and bridging social capital. Because of the central importance of social capital to a region’s ability to achieve social and economic progress in times of global “hyper-competition”, indicators on networking and on other types of interlinkages should

be included in the transnational benchmarking systems, which are increasingly used for informing policy-making at the regional, national and EU level in Europe.

This article has reported from work in progress. At the time of writing, a list of suggested indicators on transformative use of ICTs, including uses related to social capital building, is being discussed with experts and project stakeholders. After revision, a selection of indicators will be prototyped and piloted in a random sample survey to be carried out at regional level in selected NUTS2 regions. Findings from the pilot survey will inform the project's recommendations concerning how to achieve progress in the statistical coverage of Information Society related issues at the European regional level. The survey results will also be used to enrich the other main component of the TRANSFORM project, namely a qualitative analysis of regional innovation cultures in Europe.

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