

Does ICT Use Enhance Social Capital? Some Evidence from A Survey in Twelve EU Regions

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Abstract: ICTs radically open up 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 help (re-)produce social capital stocks. This paper uses data from a 2008 Internet user survey in 12 European regions in order to gain insight into the relationship between Internet use and social capital. The results suggest that Internet use, far from endangering social capital, is strongly associated with high levels of sociability, social participation and trust. This applies, in particular, to uses of so-called participative web applications.

1. Introduction

In recent years the notion of social capital has attracted much interest in the public debate, in particular with regard to strategies for fostering development in the knowledge-based society and economy [4]. Social capital is 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” [12].

In general there is the assumption that social capital has positive effects not only on those who “own” it, but also for the community at large. This is due to the externalities generated by social behaviour, which often have the form of network externalities. 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.

Closer analysis, however, reveals that there is a need to make a distinction between different types of social capital if the purpose is to identify structures and developments that are conducive to economic development. The literature [7] distinguishes between: (a) bonding social capital, i.e. “strong ties” between like people (or organisations) in similar situations; (b) bridging social capital, i.e. more distant or “weak ties” of like persons (or organisations); and (c) linking social capital, i.e. “weak ties” which reach out to unlike people/organisations, such as those which are entirely outside of the community or in a different sector. It was Granovetter [9] who famously proclaimed “the strength of weak ties”, pointing towards the increasing importance of weak interlinkages for success in social and economic domains. It appears that the relative importance of weak ties has, indeed,

increased at the same time such that economic success is being based more and more on the success of inter-firm network-building and the efficient transfer of tacit knowledge. Similar observations have been made regarding the social domain. There is tentative evidence suggesting that bridging social capital, in particular, is undersupplied in many EU regions – especially in those which perform poorly on indicators of economic development [13].

2. Objectives of the paper

Against the background outlined above, the possibility to use ICTs as a means 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. While the early debate was dominated by dystopian accounts, the recent discussion about so-called Web 2.0 applications has made clear that the Internet offers immense potential for social networking, especially among people who have common interests.

Academic research including work at publicly funded research centres such as the Oxford Internet Institute [5] and the Pew Internet & American Life Project [2], as well as research by National Statistical Institutes have started to look into the ways in which the Internet and other ICTs exert a direct, tangible influence on people's lives [10] and the regions they live in [11]. The present paper attempts to contribute to this debate.

The questions that are discussed in this paper are:

- To what extent is the Internet currently used for social networking?
- How does such use relate to traditional means of interaction with other people (face-to-face, telephone, etc)?
- How do different types of Internet relate to social capital (trust, size and diversity of personal networks of social ties, social participation)?

3. Methodology

In order to shed more light on these issues, as part of the TRANSFORM project an online user survey of Internet users was carried out in late 2007 across 12 EU regions (NUTS 2 level) in 7 countries: Germany (Schleswig-Holstein, Thüringen), Italy (Emilia-Romagna), Poland (Pomorskie, Malopolskie), Slovakia (Bratislavsky Kraj, Vychodne Slovensko), Spain (Navarra, Extremadura), Sweden (Mellersta Norrland) and the UK (South Yorkshire, East Anglia). Regions were selected in order to offer high variety with regard to types of regions. In those countries where two different regions were covered, the selection sought to capture “successful” and “less successful” cases according to the level of achievement of the overall objectives of the revised EU Lisbon Agenda.

The survey instrument comprised question about Internet usage patterns, exchange of ICT skills, social activities, social and civic participation, social ties and networking, as well as contextual variables (mainly socio-demographics).

The survey collected data from 3,588 persons in private households. Findings are representative for the universe of regular Internet users, aged 18-64, according to age, gender and household size. The data were explored using a number of statistical methods including bivariate and multivariate analysis (OLS regression).

4. Findings

4.1 Uptake of Web 2.0 and online social networking applications

The buzzword Web 2.0 has been used extensively in recent years to describe applications of the Internet which comprise a strong degree of user involvement, typically combining traditional means of online communications (discussion boards, online chat, e-mail) with the possibility to upload and share (often self-created) content, to identify people with

similar interests, and to easily locate information or users which is likely to be relevant, for example by implementation of rating and “tagging” of pieces of content. In spite of a feeling that the phenomenon has been overhyped in the media, there is widespread consensus that the Internet has indeed become a powerful instrument for user involvement and an outlet for creativity [1][14][16].

The survey data suggests that the share of Internet users who actively contribute to the Internet, including uploading self-created content, is indeed considerable. 57% of Internet users have, in the 3 months prior to the survey, posted messages to chat sites, newsgroups or online discussion forums; 42% have uploaded self-created text, images, photos, videos, or music to any website to be shared; 22% have designed or maintained an own website; and 14% publish an own blog. Taken together, Internet users who have contributed self-created content in the 3 months prior to the survey make up 51% of the sample. If engagement on chat sites, newsgroups or discussion forums and creating a profile on a social networking site are added, the share (which may be dubbed “participative web users”, see [14]) rises to 74%.

Other more recent applications of the Internet are also utilised by large shares of Internet users. This includes online phone calls (34%) and desktop-based video telephony (28%). Closer inspection of our survey data confirms earlier research [6] according to which people with strong social ties to foreign countries (including ethnic minorities) are amongst the strongest users of these kinds of new communication services, as they allow for inexpensive and frequent contact regardless of distance.

4.2 *The Internet's impact on sociability*

A study by Pew Internet on “the strength of Internet ties” [2] provided evidence from a sample of Internet users in the USA about the role of e-mail and the Internet for social networks. The researchers found evidence that:

- “E-mail is more capable than in-person or phone communication of facilitating regular contact with large networks”;
- “E-mail is a tool of ‘glocalization’. It connects distant friends and relatives, yet it also connects those who live nearby”;
- “E-mail does not seduce people away from in-person and phone contact.”

Support for the first statement was found when analysing the effect that changes in the size of networks of social ties have on the frequency of contacting these ties at least once a week: “There are only 24 hours in a day, and so it is not surprising that the amounts of time people spend on in-person and phone contact with their [social] ties, on a percent basis, decreases when they have large networks. [However,] it is a different story for e-mail: People contact the same percentage of [social] ties at least once per week regardless of whether their networks are large, medium, or small. This means that a greater number of social ties are contacted by e-mail in large networks.” [2: 15]. This finding is of some relevance as it suggests that e-mail is of high instrumental value for maintenance of weak ties, since they are typically much more numerous compared to strong ties [9] and as such more difficult to maintain by means of face-to-face or telephone communication. It appears that, in particular, the one-to-many function of e-mail and other ICTs (instant messaging, texting) enables maintenance of larger networks of social ties.

Can we find such evidence in Europe as well? In order to test this hypothesis, the TRANSFORM survey included an extensive module on social ties, their structure and diversity and the means with which these are being contacted (see Figure 1). Note that for grouping different sizes of the personal network of social ties, we applied a finer grading than the Pew Internet study in order to add precision to the analysis.

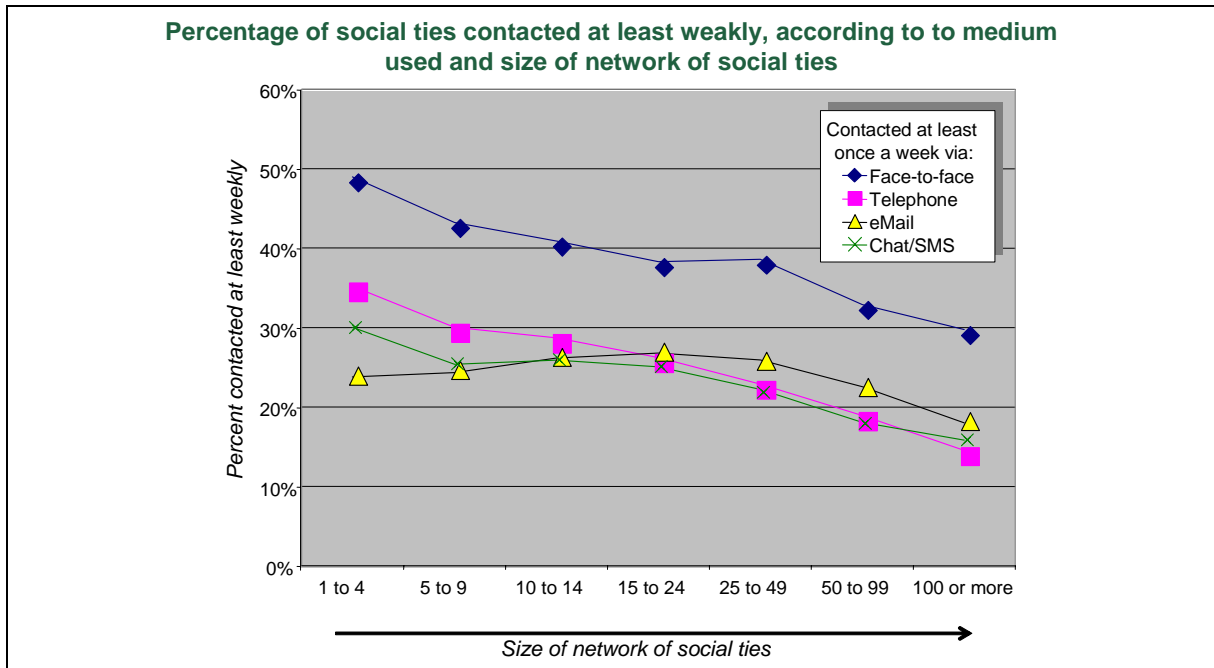
In line with the findings from [2], we can observe that the share of social ties contacted at least once per week via phone or face-to-face is decreasing significantly with increasing

network size. The same is true, to a lesser extent, for contacts via text messages.

Again as in the Pew Internet study, the pattern for contacts via e-mail or instant messaging is markedly different: For social networks up to a size of 50 persons, the curve is if anything rising rather than falling, and only sags for social networks of very large size (more than 50 persons). The latter suggests that there are limits to the possibility of keeping regular contact to large networks of social ties. Nevertheless, the fact that the share of people contacted at least weekly via e-mail appears more or less independent from the size of the network up to a size of around 50 persons indicates that e-mail is indeed a powerful means to stay in touch with large numbers of acquaintances.

The same patterns can be observed when we look at the relationship between the geographical spread of social network of ties and the share of these ties that are contacted at least once a week (not shown in the figure). While the share of social ties contacted at least weekly drops considerably the more of these are located outside of the immediate region, the negative correlation is much less pronounced for contacts by telephone and by text messaging, and does not show at all for contacts via e-mail. These results reflect e-mail's capability to enable social ties that spread across distance.

Figure 1: Relationship between size of network of social ties and frequency of contact



Data source: TRANSFORM 12 Region Internet User Survey

At the same time, however, we also find evidence in the survey data for the observation in the Pew Internet study that “E-mail [...] connects distant friends and relatives, yet it also connects those who live nearby” [2]. For example, the data suggest that the Internet is perceived by respondents as of high importance for communication with people; this holds true to the same extent for all groups of communication partners – within the same NUTS2 region; outside the same NUTS2 region but within the country; or abroad.

4.3 The Internet and social participation

Research about social capital is concerned with group membership as an indicator for social participation and individual-level investment in social capital. Our survey explored group membership in detail, including the frequency and medium used for communicating with other people in the respective group(s). We found that 65% of Internet users have been members of any type of group (business or professional association; a sport club or league; a religious organization; a hobby group or club; a neighbourhood, school, charity, voluntary

or any other local group; a political or activist group; or any other group or organization) in the three years prior to the survey. Once we check whether respondents have actively taking part in decision-making within any group they are member of, we find that one in four in the total sample is a passive group member only. Only 13% of the total sample are frequently participating in decision-making and discussions (at least 2-3 times per week).

What, then, is the relationship between active participation in groups with the use of ICTs for making contacts within groups? It has been argued that extensive use of ICTs is detrimental for civil participation, as face-to-face contacts are replaced by media-poor ICT-mediated contacts, such as via e-mail, chat or instant messaging [15]. The results presented in Table 1, however, show that strong use of e-mails and other ICT for making contacts within groups goes hand-in-hand with a stronger participation in day-to-day decision-making within these groups. It would, of course, be misguided to suggest a direct causal relationship; instead, the data reflect that strong participation in decision-making increases the utility of e-mail etc. for communication, while frequent use of ICTs makes it more likely that people participate in day-to-day decision-making within groups.

*Table 1: Relationship between active group membership and ICT use
(% of those with group membership)*

	Use of e-mail, etc for contacting group members				<i>Total sample</i>
	Never	Several times per year to once a month	About once a fortnight to once a week	At least 2-3 times a week	
Passive group membership only	74.6	36.3	22.8	15.2	37.6
Active group membership (participation in decision making) several times per year to once a month	14.6	44.9	27.5	13.0	21.3
Active group membership (participation in decision making) about once a fortnight to once a week	7.7	13.5	35.9	28.1	21.5
Active group membership (participation in decision making) at least 2-3 times a week	3.1	5.2	13.8	43.7	19.6
<i>Total</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>	<i>100</i>

Data source: TRANSFORM 12 Region Internet User Survey

The TRANSFORM survey also asked respondents directly whether they have experienced an effect of using the Internet on the number of people they communicate with at least occasionally. This is a very simple operationalisation of the notion of “weak ties” as suggested by Granovetter.

Theoretical accounts of the relationship between ICT use and weak ties have repeatedly concluded that the Internet is likely to increase the number of weak ties as it diminishes the costs of keeping in (loose) contact with a large number of people [3]. The survey results support this proposition: More than one in two respondents state that the Internet has increased the number of their private weak ties within the region as well as outside. Somewhat lower figures were found for work-related contacts. For all of these types of contacts, the share of respondents who perceive a strong increase as a consequence of the Internet is between one in four and one in five.

4.4 Explaining differences in social capital

In order to gain insight into the factors that can explain differences in social capital at the individual level, we ran a multivariate OLS Regression.

As dependent variable, we used a synthetic compound indicator on “individual social capital”. Operationalisation of social capital for the purpose was informed by the UK statistical framework for the measurement of social capital [10]. Note, however, that the

index used must be considered a rough proxy of the notion of social capital rather than a comprehensive measurement of all aspects that may be relevant for the issue. The index was constructed from the following variables:

- For social participation, we chose “active group membership” as indicator;
- For the size of social networks, we chose the number of personal social ties;
- For the diversity of social ties, we chose the number of social ties from a list of different occupations, ethnic groups and non-native languages;
- For reciprocity and trust, we chose the mean of three trust variables: general trust in people (“Generally speaking, most people can be trusted”); trust in people in the neighbourhood (“Most people in my neighbourhood can be trusted”); and trust in helpfulness (“People around here are really willing to help each other out”).

Each of the four variables were translated into a 5-point scale, normalised variable with 1 = weak/low and 5 = strong/high. The index was calculated as the sum of these values.

As independent variables, three groups of variables were considered: Socio-demographic variables (age, gender, region, still studying yes/no, educational attainment, employment status and household type); Internet experience variables (year started using Internet, hours Internet use per day, multi-location Internet use, providing help about computers to others); Type of Internet usage (Importance of different uses of the Internet for private life, uptake of participative web services). The results are presented in Table 2.

Controlling for contextual factors such as socio-demographics, we find a significant, positive influence of: multi-location Internet use (as opposed to single-location use); giving help in using computers to others apart from family & friends; strong perceived importance of “communication, work & studies” and “general information search” (rather than commercial) uses of the Internet; and – in particular – uptake of participative Internet services (typically referred to as Web 2.0 applications), here defined as comprising: Posting messages to newsgroups etc.; Creating or maintaining own weblog; Uploading self-created text, images, photos, videos, music etc. to any website to be shared; Creating a profile on a social networking site; and designing or maintained a website.

Of the socio-demographic variables, the results indicate that the following groups are significantly more likely to have strong social capital: individuals in multi-person households as opposed to people living in single-person households; students; older Internet users; men; Internet users in the Polish and Spanish regions in the sample, when compared to the other regions (in particular the English regions and Emilia-Romagna).

5. Discussion and Conclusions

The findings from our analysis support the following observations:

(a) The way the Internet is used is indeed strongly associated with levels of social capital, when the latter is defined in simplified terms as being made up by the level of trust, the number and diversity of social ties, and active membership in social groups. While the intensity of using the Internet, measured in average hours per day, does not exert a significant influence, the fact that the Internet is used at more than one location (arguably, the first step towards “always & everywhere on” access) as well as the relevance which is given to non-commercial uses of the Internet were both found as significant explanatory factor. This is consistent with findings from previous research according to which “patterns of Internet use, such as using the Internet for communication versus entertainment, provide the most critical basis for explaining the development of online friendships as well as their transitioning to offline settings” [8: 596-7].

Table 2: Association between social capital, ICT-related and contextual factors (OLS Regression)

	Unstandardized B	Std. Error	Standardized Beta	t	Sig.
(Constant)	-19.27	9.89		-1.95	0.05
Age	0.01	0.00	0.11	4.73	0.00
Gender: female	-0.10	0.03	-0.06	-3.12	0.00
<i>Region: reference=Thüringen</i>					
Schleswig Holstein	-0.02	0.07	-0.01	-0.23	0.82
Emilia Romagna	-0.20	0.07	-0.06	-2.67	0.01
Malopolskie	0.33	0.07	0.11	4.51	0.00
Pomorskie	0.32	0.07	0.11	4.33	0.00
Bratislavsky Kraj	0.07	0.09	0.02	0.77	0.44
Vychodne Slovensko	0.08	0.08	0.02	0.93	0.35
Navarra	0.44	0.07	0.14	5.93	0.00
Extremadura	0.29	0.07	0.10	4.05	0.00
Mellersta Norrland	0.16	0.08	0.05	2.07	0.04
South Yorkshire	-0.33	0.07	-0.11	-4.51	0.00
East Anglia	-0.29	0.07	-0.09	-3.90	0.00
Still studying	0.16	0.06	0.08	2.72	0.01
<i>Education: reference=lower secondary and less</i>					
Upper secondary education	0.05	0.05	0.03	1.01	0.31
Tertiary / other 21+ education	0.10	0.06	0.06	1.89	0.06
<i>Employment status: reference=inactive</i>					
Employee (incl. family workers)	-0.03	0.07	-0.02	-0.47	0.64
Self-employed	0.04	0.08	0.01	0.44	0.66
Unemployed	-0.18	0.08	-0.05	-2.17	0.03
Student (not in the labour force)	-0.21	0.09	-0.09	-2.25	0.02
<i>Household type: reference=single household</i>					
2+ person household, no kids <16	0.15	0.05	0.09	2.86	0.00
Household with children <16	0.14	0.05	0.08	2.63	0.01
Year started using Internet (4-digit)	0.01	0.00	0.04	2.17	0.03
Duration Internet use per day in minutes	0.00	0.00	0.00	0.07	0.94
Frequent multi-location Internet use (y/n)	0.15	0.04	0.08	4.10	0.00
Providing help to others than friends/family (y/n)	0.27	0.04	0.15	7.47	0.00
Internet use type: health/local/career (factor score)	0.07	0.02	0.08	4.42	0.00
Internet use type: communication/work/studies (factor s.)	0.06	0.02	0.07	3.56	0.00
Internet use type: commercial Internet use (factor score)	0.02	0.02	0.02	0.95	0.34
Index: number of web 2.0 uses	0.11	0.01	0.18	9.18	0.00

Dependent Variable: Social capital compound index (5-point scale)

ANOVA	Sum of Squares	df	Mean Square	F	Sig.
Regression	468.4	30	15.6	27.7	0.000
Residual	1343.5	2388	0.6		
Total	1811.9	2418			

Model Summary	R	R Square	Adjusted R Square	Error of the Estimate
	0.508	0.259	0.249	0.750

Data source: TRANSFORM 12 Region Internet User Survey

(b) In particular, the extent to which Internet users have taken up participative Web2.0 services such as social networking, blogging and contributing self-created content is strongly associated with levels of social capital. In general, it appears that the more advanced the use of the Internet, the higher is the score on the social capital index. Care should be taken, however, not to conclude that there is a direct causal link between ICT use and social capital. Rather, this is a case of mutual reinforcement: On the one hand, the more people are engaged within social networks and the more they put trust in fellow citizens, the higher is the utility which they can derive from using advanced Internet applications; on the other hand, the more experience people have gained in using such Internet applications, the easier it is for them to actively engage in social networks. These findings give support to the emerging view that the Internet is enabling persons with strong individual social capital

to more effectively reproduce it [17]. On the other hand, since age, gender, employment status, household type and educational attainment are controlled for, the results indicate that “the role of the Internet in social relationships [is] something more than that it is merely integrated into the maintenance of offline relationships” [11a].

(c) A strong association is also found between helping people other than friends and family in using computers and the Internet on the one hand and the social capital compound index on the other. This appears partly self-evident as more and stronger social contacts also provide more opportunities for helping others use computers. It is also, however, a reminder of the role which strong social capital plays for enabling the transfer of skills within a region. This is of special relevance for the case of digital literacy skills, since other data from our survey show that informal help from others – in combination with learning by doing – is perceived as by far the most important sources of computer skills.

In summary, the analysis presented in the present paper suggests that the Internet has indeed a tangible “impact” on users by allowing them to maintain close contact to large networks of social ties, by enabling participation in Internet-based forms of creativity and socialising, by allowing frequent participation in decision-making within social groups, and by supporting the maintenance (and possibly also creation) of social capital.

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