

Ict and e-Work in european SME's.

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Abstract: To maintain or to improve their competitiveness in the knowledge economy, SMEs face the challenge to adopt new working methods, review their work processes and adapt existing skills to new usages based on a growing use of ICT. This is the reason why the e-GAP consortium run five parallel surveys in selected Regions in Finland, France, Italy, Hungary and UK (plus a comparative investigation in Japan), looking for variables that might influence the management of the SMEs to move towards new methods of work like e-Work. The findings highlight that most of the sample companies located in the five European regions of e-Gap project have a very high level of technological growth and a remarkable knowledge of telework, but a very low percentage of them actually use it for some of their employees. If we admit that technological equipment is no longer an impediment to telework implementation in European companies, what are the elements that prevent it from spreading?

1. Introduction

To maintain or to improve their competitiveness in the knowledge economy, SMEs face the challenge to adopt new working methods, review their work processes and adapt existing skills to new usages based on a growing use of ICT [1]. This is the reason why the e-GAP consortium is running five parallel surveys in selected Regions in Finland, France, Italy, Hungary and UK (plus a comparative investigation in Japan), looking for variables that might influence the management of the SMEs to move towards new methods of work like e-Work. Specifically, e-Work has to be taken as the criterion to measure and understand the reasons that influence the management decision process to accept and adopt new working methods [2]. Understanding and clearly identifying why SMEs hesitate to participate widely in the knowledge economy would enable the EU to recommend a practical process to the management of those firms and help them to become socially responsible in the sense of the Green Paper on a European Framework for Corporate Social Responsibility [3].

With the present paper we intend to compare the outcomes of surveys, in order to bring out the reasons why and the ways (within specific professional environments) how telework and eWork meet difficulties in implementation and provide positive outcomes for cooperation.

2. Objectives

The e-Gap project compares the attitude of small and medium size firms towards telework in five European countries: France, Italy, Hungary, Finland and United Kingdom.

In each country, we have chosen only one region, usually with a high level of technological development and with excellent economic performances.

The five regions of e-Gap project are:

1. - Rhône-Alpes in France;
2. - Emilia Romagna in Italy;

3. - Central Transdanubia in Hungary;
4. - Tampere Region in Finland;
5. - Greater West London Wedge in the United Kingdom.

The study carried out by the e-Gap project was both qualitative and quantitative. Nevertheless it did not look for precise quantitative comparisons, but within various perspectives, made experiments in these environments and according to the meaning given by their protagonists. Such a study should highlight some of the best ways for use of new technologies and the overcoming of major barriers or inhibitors to their usage.

In order to explore the two above-mentioned levels, three types of investigation have been used:

1. Data collection and classification about political, legal, social and financial environment of telework and e-work at the context level.
2. A quantitative and representative survey of SMEs in a significant socio-economical area, at the actors level, with a sample of about 300 establishments in each of the participating country, using a questionnaire and computer-aided telephone interviews. Quotas of establishments weighted by business sectors ensured that the results has not been dominated by specific ones (like IT sector).
3. In-depth interviews with various selected people among enterprises, according to a significant sample: workers, managers, executives, and trade unions (actors level). About 60 people per country will undergo semi-directive in-depth interviews [4].

To obtain the final sample of at least 300 SMEs per Region, the firm selection and sampling process took place in accordance with two main criteria: firm-size based on employment numbers and the sector of economic activities. In terms of firm-size classification, only those firms that employed less than 250 people were sampled, whilst were excluded those that had no employees. It was even decided that businesses with less than 10 employees would be under-represented because their organisational scheme makes experiencing changes more difficult. According to economic activities, we left out agriculture, hunting and fishing, some manufacturing industries (foodstuff, leather, wood, textile and other sectors), mining & quarrying, construction, wholesale & retail trade and accommodation industries.

3. Methodology

The survey was undertaken in the period November-December 2002 using a common questionnaire. The first part of the questionnaire referred to the use of information and communication technologies (ICT), the second part inquired about work organization, the third part investigated features of telework practices and managers' opinions on them, whereas the fourth part investigated organizational background of participating firms.

The aims of the questions about company's technological equipment were: first, to survey equipment currently available in firms (e-mail, access to the Internet, corporate website, etc.) and second, to collect information to classify companies according to their attitude towards technology. The questionnaire also includes a question about previsions for technological improvements and a subjective evaluation of the level of corporate technology compared to competitors' one.

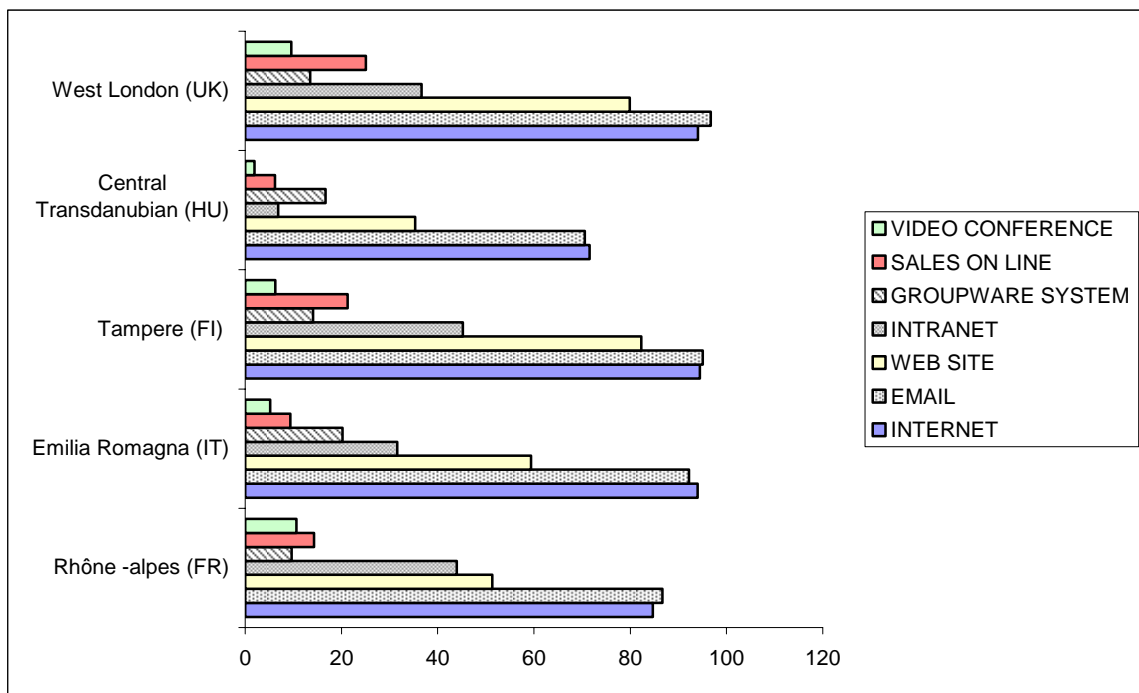
In order to understand management attitude towards technology, we insert two Likert's attitude scales [5]: the first one, about disadvantages of ICT (waste of time surfing on the Internet, risk that employees may use information services for their own use, data security-related issues), and a second one, related to problems connected to ICT technologies' introduction in workplaces (generational gap, too little time for training, workers' resistance, etc..).

The second part of the questionnaire concerned work organization, in order to draw a picture of corporate culture within companies. We asked the level of interconnection with other companies, the use of flexible working time, the utilization of project work and the level of autonomy granted to employees. A final part of questionnaire concerned eWork and telework. We analysed behavioural patterns towards working at home through a third Likert's attitude scale. Then, we asked about familiarity with telework and advantages/disadvantages of this form of work.

4. Usage of ICT in SME's

In recent years, the use of information technology has continuously increased in European companies, especially in regions enjoying rapid economic growth such as those in the e-Gap project [6]. In each country, most of the companies interviewed possessed what we considered to be "common place" technologies: e-mail and the Internet are used in almost every company, especially in Finland and United Kingdom (*Graph 1*). Even in Hungary, where e-mail and the Internet are less widespread, they are used by almost 75% of the company. But we must remember that some sectors, which are well known to be low users of e-mail and the Internet, such as small retailers and construction firms, are not included in our survey sample.

Graph 1 – Technology equipment



Other ICT instruments are less frequent in the regions of the survey. The use of the intranet is relatively less widespread everywhere, and in Hungary it's quite uncommon (below 7%). Web site and sales on line are less popular also, except for Finland and the United Kingdom, where web presence scores a level of penetration close to 80%. Co-operative work systems are not used everywhere, except for Italy (20%). Even video conference is not used very often: it is quite rare in Hungary (2%) and relatively low in Italy and Finland. It is used by about 10% of the companies only in France and United Kingdom.

A particularly significant detail concerning the level of technological innovation is the possibility for all, or part of the staff, to gain access to corporate database services. The information is very relevant, because companies that grant corporate access from the outside (checking out e-mails or other in-house information) may correspond to those readily inclined to promote e-work or telework. Figures (*Table 1*) allow a certain degree of optimism just for France where for more than half of the companies, everybody can use ICT equipment remotely. In the other countries, especially in United Kingdom and Hungary, this possibility is granted to a low percentage of employees: what is surprising is that nearly 40% of English firms don't allow any remote usage of their intranet.

Table 1 - Who is permitted to use ICT via remote access?

	Rhône-alpes (FR)	Emilia Romagna (IT)	Tampere (FI)	Central Transdanubian (HU)	West London (UK)
Everybody	55,4	27,2	21,6	14,4	15,8
Only senior management	24,1	11,6	23,0	24,2	31,7
Even middle management	10,5	9,2	22,0	8,8	11,2
Even supervisors	7,5	16	0,0	1,6	1,0
Nobody	10,9	33,6	31,1	32,0	37,6
N	294	500	305	248*	303

* The percentage of *not answer* is very high (19, 0%)

5. Attitudes to remote work

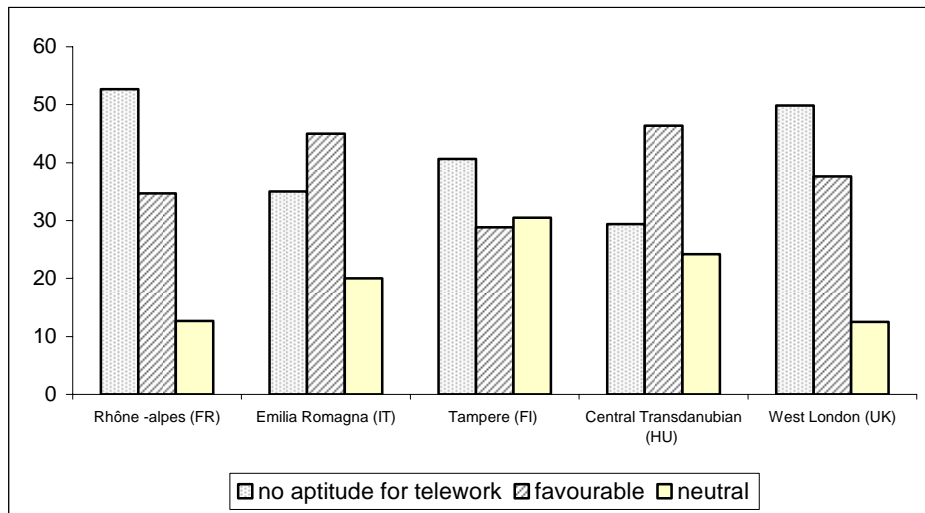
To measure the attitudes towards work at distance, we used a Likert's scale, based on the agreement/disagreement rate to some statements (*Table 2*) [7]. The main agreement among the managers relates the statement according to which working at home is only suitable for trustworthy and core employees of the company. This is true almost everywhere, but in Hungary. In United Kingdom, more than 90% of managers interviewed agree with this assertion. The statement Hungarian managers agree most with is the one claiming that people at home work less because the lack of managerial supervision. It is surprising that a wide percentage of English managers, where telework is very widespread [8], also agree with this statement. Another important assertion, in order to understand the positive aptitude towards work at distance, is the one claiming that home worker's efficiency is higher because they can organise themselves autonomously. The percentage of agreement to this assertion is close to 45% in France, Italy and United Kingdom; it's a little bit smaller in Finland and especially low in Hungary.

Table 2 - Attitude Towards Remote Working (percentage of agreement)

	Rhône alpes (FR)	Emilia Romagna (IT)	Tampere (FI)	Central Transdanubian (HU)	West London (UK)
- People work less from home because they don't feel controlled	16,3	23,6	17,0	47,4	40,3
- Working at home, is very difficult to match work and leisure time	52,7	35,0	40,7	29,4	49,8
- Work at home is suitable just for trustworthy and close collaborators	61,3	58,2	41,3	23,9	90,8
- You can work better at home because office is a source of distractions	20,0	13,8	28,9	31,0	30,0
- Home workers' efficiency is higher because they can organise themselves autonomously	44,6	44,2	31,1	26,8	45,2

We have aggregated these figures in a synthetic index of inclination towards working at home. According to this index, Hungarian firms seem to be more favourable to work at home, while more than half of French and English entrepreneurs shows some hesitation toward it (Graph 2). In fact, to launch e-work the company has to adopt new ways of operation and reorganize its work. This often pose problems because organizing business in an old established manner often feels easier than making rearrangements.

Graph 2 – Inclination Towards Working at Home



6. Aptitude and interest in teleworking

Despite the fact that most of the sample companies located in the five European regions of e-Gap project have a very high level of technological growth and a remarkable knowledge of telework, a very low percentage of them actually use it for some of their employees. If we admit that technological equipment is no longer an impediment to telework implementation in European companies, what are the elements that prevent it from spreading?

Actually, not all the “ICT intensive companies” - as technological determinism would have it [9]- rank among those who show a propensity for telework (Table 3). Italian figures show that the number of firms not inclined to telework is even smaller in companies with a low level of technology. We even notice that companies in favour are not always more easily found in high technology firms. There are companies who have a high level of technology but they are not inclined to use telework, just as there are others that have a low level of technology but are more eager to test it. Therefore, the relation between two variables, level of ICT in the firm and interest in telework is not linear.

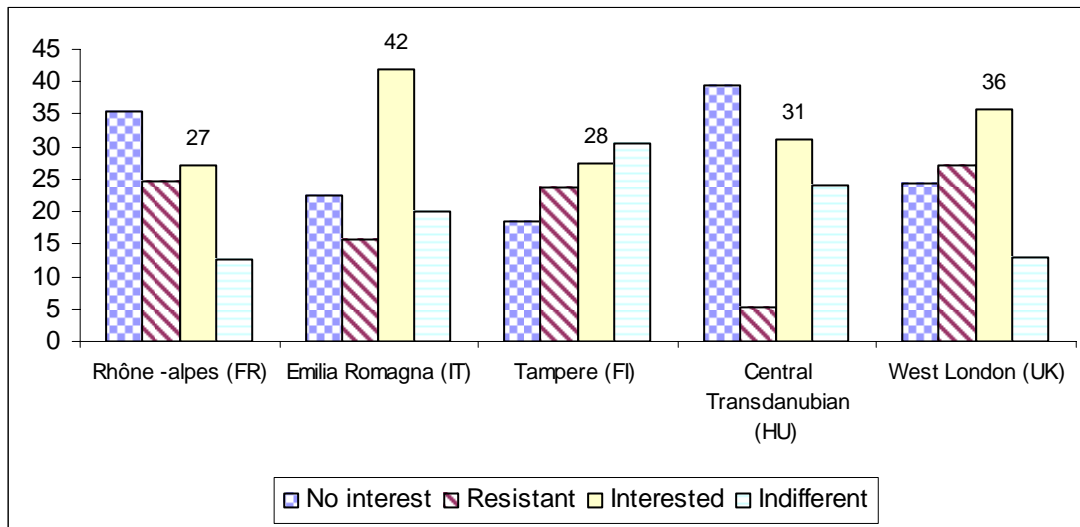
Table 3 - Propensity For Remote Working according to the Level of ICT Equipment.

Rhône -alpes (FR)	low	medium	high	Total
No aptitude for Telework	93,3	54,7	-	35,5
Favourable towards Telework	-	-	54,0	24,7
Neutral towards Telework	-	30,8	32,8	27,1
Emilia Romagna (IT)	low	medium	high	Total
No aptitude for Telework	19,4	36,6	35,8	35,0
Favourable towards Telework	44,4	41,5	49,1	45,0
Neutral towards Telework	36,1	22,0	15,1	20,0
Tampere (FI)	low	medium	high	Total
No aptitude for Telework	43,8	37,5	42,6	40,7
Favourable towards Telework	25,0	30,8	27,8	28,9
Neutral towards Telework	31,3	31,7	29,6	30,5
Central Transdanubian (HU)	low	medium	high	Total
No aptitude for Telework	30,1	32,6	22,2	29,4
Favourable towards Telework	50,5	41,1	51,4	46,4
Neutral towards Telework	19,4	26,2	26,4	24,2
West London (UK)	low	medium	high	Total
no aptitude for Telework	50,0	50,0	50,6	50,3
Favourable towards Telework	37,5	37,5	38,9	38,3
Neutral towards Telework	12,5	12,5	10,5	11,4

Combining the above figures by the aggregation of some of the cells by crossing the two indexes (*technological level* and *inclination to work at home*), we can achieve a model of “propensity to telework”. In this way we have build four ideal-types of entrepreneurs [10]: the first type, labelled “not interested” (28,1 % of the sample) are those who have very low ICT in the firm and little or no inclination towards telework. In their case the lack of technology actually compromises any telework experimentation. Resistant (19,1%) on the opposite side, are those who are not in favour of eWork, in spite of having technological facilities. The most significant category is the Interested one (32,6% of the sample), composed by those entrepreneurs who, from a cultural point of view, are in favour of telework and could adopt it, because they have a medium-to-high technological equipment. Those who expressed no opinion regarding work from home can be regarded as Indifferent, in spite of their technological equipment.

According to this classification (Graph 3), Italian entrepreneurs interested in telework are above 40%, followed by the English (35%) and the Hungarian managers (above 30%). Italy has a low percentage of firms indifferent to telework (15%), and this is specially true for Hungary (only 5%) but we could explain this data if we remember that the number of firms with a high technological level in Hungary is very low, compared to the other countries. However the percentage of Hungarian companies not interested in telework – those with no technological equipment and little or no inclination to telework – is much higher than in the other countries (close to 40%). On the other hand, the number of this kind of firms – not interested to telework – is very high in France (above 35%), while Finland has the highest percentage of firms classified as indifferent (above 30%).

Graph 3 - Model of propensity to Telework by Region



It should be noted that there is a strong relation between favour to telework and the chance of employees to organize their own working time. Almost everywhere, companies that have no interest in telework admit more frequently that nobody can organise his own working time. Instead, firms that are favourable to telework grant this chance more frequently to all employees – or at least up to middle managers. Other interesting research findings include:

- The absence of a remarkable relation between inclination to telework and branch of economic activity: only in Italy and in Finland the percentage of interested is a bit higher in Service than in Industry.
- The strong relation between inclination to telework and the chance to work in a project mode. The relation is remarkable everywhere and particularly in Italy and in United Kingdom, where the percentage of firms that are interested in telework is remarkably higher among firms that allow both office staff and external collaborators to work in a project mode.

7. Conclusion

The survey carried out in these five regions let us set up some general conclusions, in spite of some differences in the results, as outlined in previous paragraphs. Basic ICT level is very high in all countries, especially if we think to Internet and e-mail diffusion. Anyway, essential technologies for e-Work development seem to be still not very widespread, as in the case of intranets and collaborative tools. Entrepreneurs state that the main problems, introducing new technologies, are the lack of time for training, the resistance to changes and the generational gap [11]. These answers indicate a low level of propensity towards innovation, regardless the level of technological equipment.

From an organizational point of view, the degree of innovation seems to be low: project work is not widespread in the interviewed SMEs; management is still very hierarchical and the only widespread form of flexibility is related to new forms of labour contractual arrangements. Moreover, the most common management model is direct supervision and visual control of work: that is why working site-off is not yet a common practice and it is used mainly by managers and sales force. Although the majority of interviewees know the meaning of the term “telework”, among entrepreneurs prevails a stereotyped vision of

this kind of work, according to which employees are the main beneficiaries of this form of flexibility and economic benefits of telework, well known in the literature [12], are considered almost insignificant. We must finally note that only a third of interviewees could be classified as interested in telework, while most of those interviewed were not interested, indifferent or resistant.

The outcomes of our survey are quite clear: technology is not sufficient for telework diffusion in SMEs, and the reason for this low diffusion must be researched in the effect of organizational cultures more than in technical problems. In fact, the inclination towards telework doesn't change in significant ways together with changes in technological equipment. This centrality of the cultural issues, raise, in our opinion, the need for future EU founded projects to focus even more on the approach of people to ICT, dedicating every effort in investigating the cultural aspects of new technologies. Marie-France Kouloumdjian, Scientific Coordinator of eGap, stated: "this reluctance and delay may be the expression of reactions which are more important and legitimate than they seem. If that is the case, we should seriously reconsider the forced march of the company towards 'ICTs and nothing but' as a basic premise in tomorrow's eSociety" [13].

The next steps of eGap will therefore concentrate in the matter of the "cultural gap". In doing so, around 300 entrepreneurs, decision makers and teleworkers will be interviewed to draft from their opinions a possible new European wide policy to facilitate the adoption of new working paradigms in SMEs.

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