



"This project has received funding from the European Commission within the framework of the European Year of Workers' Mobility 2006"

Bulletin nr.

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Study on
Women's Mobility
in the ICT Sector



1. Family and School's influence

Primary and secondary socialization play an important role in young women's orientation towards ICT like in any other adult phase. Firstly, we should consider maternal and paternal image that influenced an orientation towards computers and, successively, towards ICT. Any constant elements have been found out in this aspect. On one hand, the passion for computer derived from an emulative process of father's IT job; on the other hand, the approach to computer was caused by contrasts with father who was against it. However, a different approach to technological education between boys and girls has been confirmed. By reducing the so-called "bad boys, good girls" it is possible to associate technological leisure to children (bad-technological-boys). In one example, the passion for computer has been associated to an assembling-disassembling of toys.

Even among women interviewed, young women's socialization seems to be linked to the maternal role. During interviewees' adolescence, the spread of internet was not at the actual levels, thus it is not possible to associate the influence of computer to the choice of an educational pathway and, successively, a career in ICT.

However, we should notice that some successful cases (high professionalism and managerial positions) have shown an inclination (pc attachment) towards computer and calculation since early childhood. Passion and direct and indirect knowledge of ICTs are intertwined with a multiplicative effect having an impact on ICT professional careers.

About school's influence, observations are more homogeneous. An important obstacle emerges from school experiences. This is represented by traditional training activities which transmit technical skills in men's careers with a distinction between men's highly technological area and women's less high tech one.

The issue had already been raised by Percy Snow in the 1960s. He underlined a distinction between humanistic and scientific disciplines as a problem to be solved in order to accelerate human development and associate social development to technological one. About this profile, there has been a unanimous agreement among women interviewed: they confirm that the presence of ICT technologies is limited to Scientific Schools.

In one case, a technical school has been chosen because of computers available at school. In these examples, school consolidates gender division that had already grown in family and in primary socialization. As a result, girls were sent to "female" learning activities such as teachers' training schools and female professional schools.

In certain cases, teachers' influence is relevant; in fact, they are able to eliminate gender division, though they represent isolated cases. It seems that Mathematics teaching, even in scientific schools, does not encourage an ICT approach. Some interviews show disastrous effects caused by mathematics and a consequent estrangement from any mathematical "device".

2. School-ICT mobility

Despite the interviewed women's choice among ICT professions, the expected vocational guidance towards technical school and ICT jobs has not been confirmed. Among interviewed women coming from

technical schools, some of them entered ICT labour market in an indirect way, whereas people coming from humanistic schools show direct vocational guidance towards ICT professions.

Based on these experiences, there is a trend towards a correlation “unemployment-entrance to low profile ICT”. This means that colleagues having the same school career but with long periods of unemployment tend to find low-profile ICT jobs such as call centres.

Furthermore, University does not ensure high-level and well-remunerated ICT professions. In some cases, apart from the educational qualification, women can have satisfying professions suitable for their profile only after some years though they are modestly remunerated. Women entrepreneurs represent few cases: they show that entrepreneurial career is not related to scholastic career. Employment in the ICT sector generally derives from a preference or an occasional choice rather than being determined by a professional project or a specific project idea. A specific agreement is given to the lack of a clear and stable image of ICT professions. About this issue, it is worth underlining a certain insecurity of school curricula unable to outline future ICT professions. Results deriving from the Spanish example confirm the importance of “causal” factors in choosing an ICT job. This consideration is related to Spanish women’s different job position: most of them are “entrepreneurs”. It is a common knowledge that entrepreneurial careers follow “non-linear” paths, though they are linked to entrepreneurial creativity, exposure to risk and emotional incentive towards autonomous projects. Within this professional context, ICT can represent an opportunity, like many others, to carry out a business project. As a result, Spanish women entrepreneurs’ position is pacific as they attribute a more relevant “value” to their job experiences rather than to knowledge acquired during school careers.

Therefore, we observe that from both “supply and offer” points of view there is an inadequate knowledge of professional opportunities offered by Information and Communication Technology. To this purpose, an informative day on ICT professions (ICTs Professions day) has been suggested.

In the starting phase to enter ICT labour market, any particular discrimination is not described. However, there is a masculine and feminine feeling of a lacking confidence in female capability to face and deal with technologies. This trend is quite common especially among women working with Hardware and components. The section has also allowed to underline some gender differences in entering ICT professions. The first difference refers to contract and women’s levels of classification that are lower than men’s ones.

The second difference refers to geographical mobility that represents an obstacle for those young women with family ties. Approach to Information Technology reflects the ordinary organization of work for Industry; here, the first job experiences show lower salary levels. Although they do not refer to women interviewed, there are some IT jobs characterized by precariousness and working conditions that are qualitatively insufficient, such as call centres. A considerable difference is observed between big companies and small ICT ones. On one hand, big companies show a higher protection of work and investments to improve professionalism; on the other hand, small companies lack of protections and have lower working conditions. Some interviews indicate that, despite negative aspects related to contracts, small companies offer a higher opportunity of career and training. Organizational typologies adopted by ICT companies are marked by projects and encourage teamwork. Consequently, it develops interrelational capabilities, by imposing at the same time working hours and stress due to projects deadlines.

There are three main constant aspects: the lack of internal training, “gender-based” division of work and conciliation policies. Despite answers that differ depending on age, they all converge towards these three critical elements which hamper women’s mobility in high-tech jobs.

3. Transitions and job mobility (Job to Job. J 2 J)

Before showing the main results in this area, it is worth reminding a general principle that is followed by each company in human resource management; working in the same company for a long time reduces human resources management expenses and increases productivity. The same principle, that is central in Fordist Economy, can also be applied to a woman who looks (almost theoretically) for a long-term job due to her rational strategy (income curve) and emotional reasons (social security). For these reasons, Fordist big factory played a social role based on generation and preservation of jobs. Considering that most interviewed women have confirmed a search for “security” and professional objectives addressed to big Industry, it is hard to assess the impact of Information Economy on these perceptions and strategy adopted by both company and workers. Certainly, the wide range of ICT companies within Information Economy is looking for “flexibility” of work in order to carry out competitive challenges thanks to a higher advantage.

The already mentioned differences between big and small companies influence internal and external paths of Job mobility. Generally, also for IT companies, the “short-term cost” point of view should be overcome by the one related to knowledge and job experience curve. This has a wider temporal space than annuity. These kinds of differences have not been verified between small company and big company but between private and public companies. The unit of comparison was represented by Sudtirol public environment marked by a higher protection of work. For this reason, it represents, at least in that geographical area, women and men's job objective; this is particularly relevant for women, as working conditions allow part-time jobs and favourable family policies, from family leaves to those related to relatives' care. As a result, it is not surprising that job mobility in public ICTs prevails over private ones. Answers have supported this fact even when the theme of progression in career was discussed. Consequently, the so-called “crystal

ceiling” seems to be less resistant in public sector than in interviewees' private companies.

A particular interest derives from some interviews. Here, family commitments are considered as the main causes of the so-called “negative” mobility. They also correspond to a change in ICT profession due to a lack of company policies of “family-work” conciliation in order to look for other companies having higher protection of work and workload. In some cases, permanence in the ICT sector has been interrupted because of this need to find better working conditions also in other sectors. At the same time, “immobility” cases are found out. These are due to workload and progression in career had been interrupted to face family's commitments. It is worth specifying that, at first, the survey has been faced in the same way as a physicist with an experiment: independent variable has been removed. Therefore, even in our case, differences in treatment have not been considered in the first interviews that confirmed “the indifference” of gender issues among the youngest interviewees. However, when the woman's “family role” has been discussed, gender has been introduced again as the analytical imperative to be observed also in ICTs.

In conversations with interviewees, the structural interdependence (well described by Durkheim) has been confirmed. According to him, family's needs and problems are transferred to the working field and vice versa. A certain interest was also based on understanding whether “nomad” careers were verified or not. The trend developed by some European experts intends to underline the exponential mobility caused by new Knowledge economy, which has not been pointed out during the interviews. There is a pacific difference between answers respectively provided by young and adult interviewees. Young women see mobility as a positive and favourable factor for professionalism; adult women have opposite points of view towards mobility and, consequently, they represent negative elements for professionalism and career.

On the contrary, the meeting of opinions is underlined in comparison with professional competence. For interviewees, apart from their age, with solid learning careers (degree in computer science, engineering or mathematics) and consequent high-level job experiences, ICT competence is the means to overcome any obstacles to mobility. If we analyse in depth some interviewees' vital plans (outlines), it will be possible to claim that some dimensions of their personal or family life have been sacrificed to get results in high tech work. However, it is probably the individual assessment that counts. Therefore, according to this criteria, it is indispensable to include opinions expressed depending on their related frame of values, without any doubt on sacrifices and, consequently, on obstacles to their mobility that are perceived by the observer, not by the observed.

In particular, the research carried out in Spain, that, as already mentioned, reflects a higher number of women entrepreneurs, shows how ICTs are considered as an helpful instrument to one's profession, apart from being the subject of a professional job; in fact, the particular entrepreneurial function contributes to a research of instruments of Knowledge Management ICT which are useful to improve company's efficiency as well as its creativity.

The nature of ICT professions offers another element of analysis: the need of a professional updating; in fact, training is the crucial condition to improve knowledge, to adapt it according to changes in technologies and to face the desired mobility paths.

Most interviewees complain about the lack of a sufficient and constant professional training provided by the company. Some women have paid for private courses in order to follow professional updating; other women have fulfilled this need by searching on the internet.

The missed grant of training programmes by companies is often related to stressful working conditions. In some cases, despite the existence of a company-training offer, it was not possible to attend the courses due to a considerable workload to achieve. This especially occurred in

“software” functions. Analysing this trend in depth, it has been possible to understand that the practice related to work externalization in ICT companies is due to a distinction between “good” works and “bad” works. According to interviewees, outsourcing and subcontracting involve many young women, even those with high competences. The possibility to have remote and distant workplaces seems to contribute exploitation of high professionalism in poorly qualified works; alternatively, it involves poorly qualified female staff in works of a certain quality as the consumer is still not able to perceive congruence between technical solution and the problem that has been pointed out.

Concerning interviews related to big IT companies, we notice a high internal mobility rate. This is due to a staff's transfer that was necessary to face considerable workload imposed by a project-based organization. In these cases, productive needs can be coherent with female workers' expectations. However, they risk to be incoherent and, consequently, not appreciated. The issue particularly involves Human Resources Management that should align productive needs with workers' expectations.

In one case, the usefulness of employees' associations in IT companies has been underlined. Thanks to these, women can manage their interests concerning external and internal mobility in a specific ICT sector. The big multinational companies themselves, including professional and geographical mobility because of their size and location, have the opportunity to “decentralize” less remunerative “works” or “projects” to other companies or productive segments in software or hardware ICT production cycle. Decentralization into segments of the productive chain is matched to polarization between high ICT professionalism and low ICT professionalism.

Since Companies' sizes also reflect a Trade Union's stronger presence, the abovementioned problems should be discussed within each company's contractual schemes. However, it is worth underlining the

need of a good social dialogue that can also include public institutions in order to bring out women's role in the ICT sector.

When the viewpoint shifts from a European dimension to an international one which most IT companies belong to, the analysis of demand of low-level IT professionalisms imposed by polarization of production into "production segments" should not be neglected. This demand directly involves women in definitively disadvantaged situations. Technological evolutions and the pervasive nature of ICTs have determined rapid changes in production with consequent company reorganizations. These have even led to factories' bankruptcy. The subject has been hardly touched by interviews, but it should be carefully considered as mobility, in company crisis, mainly affects women. This is a kind of mobility shifting from employment to unemployment.

The seriousness of these mobility problems is proportional to women's age, and their family commitments; it is inversely proportional to their bad health conditions, poor level of education and of IT skills. Although the issue has been raised in one case, it is worth indicating it for necessary public policies on redundancy management in ICT sectors; these policies need to be managed by a gender point of view.

The request for flexibility by big or small companies has been a common factor in the interviews. Interviewees do not always consider flexibility in a negative way. Flexibility is mainly motivated by demands in production peaks, organizational demands based on a project-based structure or seasonal factors. The youngest interviewees see it as an opportunity of job mobility when it deals with having different company functions with consequent professional learning. Among less young women, flexibility is seen as a problem to be faced. Consequently, they feel discouraged towards ICT works.

Within this thematic area, we notice a collaborative behaviour among women in

facing problems imposed by organization of production. In some interviews, we have tried to understand why women tend to be more collaborative with each other than male colleagues do. It seems that we should find an answer in the sharing of problems related to "care". This feeling joins women in a common effort towards adversities of life. However, this consideration, suggested by some interviewees, has not been shared in other interviews in which envy and poor collaboration among women (and men) were underlined. Furthermore, a certain gap has emerged even in the use of ICTs to conciliate family and work. For instance, given ICT features, we expected that they would allow to conciliate family and work by supporting distance work. Unfortunately, for interviewees, concerning distance works, ICTs have "invaded" the family environment in which they impose stressful work paces. A definite agreement has been reached on women's communicative capabilities as well as their ability to solve typical IT problems. A unanimous opinion refers to the fact that men give more information whereas women tend to search for it. As to Technology, men tend to have a control over it whereas women use it for some reasons. According to the interviewees, these two features contribute to support woman's internal mobility. A common aspect that characterizes the research in Spain, Italy and Ireland is referred to social and relational skills; in fact, all interviewees confirm their relevant communicative skills in ICT works for both efficiency in team and project-based works. In particular, the Irish case, thanks to "soft skill" term, has suggested a further analysis between the "communicative" value of ICT skills and the specific need of profiles functioning as interface or "competent" intermediaries. Thanks to soft skills, these profiles should be able to link supply to offer as they better focalise software and ICT technologies manufacturers' work and obtain customers' higher satisfaction.

4. *Future paths of ICT professions*

Concerning mobility towards other ICT roles inside or outside the company, all interviewees agree upon the need to have a solid professional competence “to hold” new positions even if these belong to the same kind of professionalism previously practiced. As a result, competence is the most important variable to start interviewees’ mobility paths. Other several factors have been considered as factors of job mobility: age, hierarchical position, job satisfaction, family’s geographical mobility, organizational environment, training programmes, family-work reconciliation policies and so on. Some interviewed women remind the link between temporary job and mobility paths. In some cases, colleagues with temporary contracts have found more stable jobs even outside ICT sector. This has determined causality between mobility and type of contract.

According to this relation, an interviewee has ironically noticed that if Commission wanted to increase mobility flows it should also increase the application of fixed-term contracts. At the same time, a fixed-term contract reduces (or even cancels) the possibility of an internal mobility. Concerning this subject, another interviewee, member of Trade Union, has underlined the relation between the fact of belonging to Trade Union and internal mobility flows, claiming that Trade Union female members can have improvements in their careers.

Concerning the analysis of mobility having the same spatial and temporal coordinates as the abovementioned experience, the discussion on future perspectives of mobility does not seem to attract the same interest as the current discussions do. However, interviews have led to ponder upon the need of new professional profiles in ICT jobs. These can function as “interface” between customers’ needs and the technological offer that currently exists or is in progress.

Two subjects seem to converge towards this point of interest: appropriate technology and soft skills. A considerable quantity of information was written on these two subjects. The need of appropriate technology that was introduced in little mechanical companies in the 1970s, intended to underline the gap between supply and offer of Technology; this led to the consequent pressure on technology manufacturers and small handicraft businesses.

The same need of adaptability involves ICTs and manufacturing industries that should act by following the common principle of scale economy that is in contrast with a variety in use of technologies. Although it is mainly based on software, the discussion was also referred to Hardware in its ergonomic profile. Some interviewees involved in software production have pointed out the need to a customer-centred programming limited by a poor flexibility of “licence” ICT products. The same “open source” technologies are included in rigid cards that do not fulfil customers’ specific needs. Without getting into analysis that would require technical competences outside the economy of this study, it is important to focus the attention on the need and usefulness of profiles functioning as interfaces (like ICT interface instruments). They aim at appropriate ICT technologies according to demands with consequent multiplicative effects on company productivity and, in general, local income.

The second subject can be included into a wider frame of “soft skills” that most books and publications consider as interpersonal, social and communicative features. These respectively represent an added value to professional competence in general and ICT competence in particular. Going on with this trend and defining these social competences by the middle letter of ICT acronym (it stands for “communication”), it is possible to point out a professional conduct that aims at “interacting” supply and offer of ICT products

and services and interpreting ICT as a crucial mechanism of human communication.

As a result, appropriate technologies and soft skills lead to ICT soft skills. They represent ICT intermediate professions between supply and offer and interface between market needs and IT solutions. Basic background is still related to ICT classical competences; however, they do not require any rigid knowledge frames, as it is sufficient to have general technical knowledge associated to solid diagnostic and dialogic skills with contexts.

If this new ICT profile arising from interviews seems to be feasible, woman is the ideal person to hold this organizational function.

Not only cover IT interface professions (or ICT soft skills) the company's needs, they also underline their usefulness for collective and community need. We can take as an example migratory flows towards Europe and the increasing number of multiethnic communities. That is why, in these local communities, the presence of ICT figures that are able to manage virtual multilingual communities can strengthen social bonds, increase opportunities of development of Human resources and capital stock. Consequently, new curves of economic growth are generated. ICT interfaces are added to ICT developers, ICT administrators and ICT managers, enriching the range of professions for "Knowledge society".

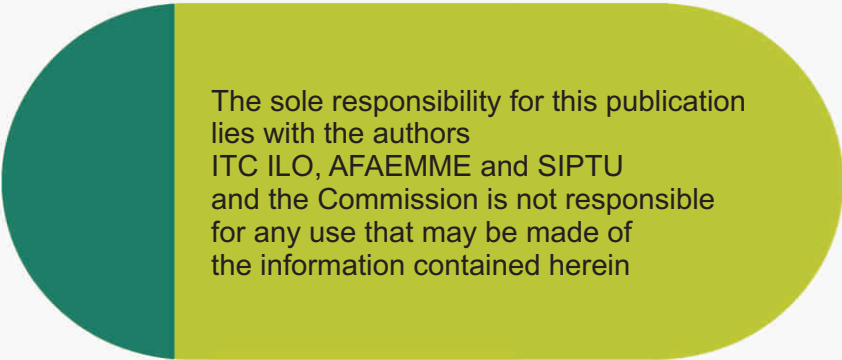
The idea of these "intermediate" professions is placed into the trend pointed out by Capecchi (ICT and New professions, 2005) as creative ICT professions for local community. An ICT profession is creative when it fulfils the following specific features; these are transversal and refer to equality, integration between human sciences and humanistic ones and quality of life. On one hand, the transversal aspect refers to a connection between information management of communicative and social processes; on the other hand, equality refers to a gender balance in profession. As claimed by Capecchi, a

profession can be considered as "creative" for local development if it shows "transversal" features: it is capable of being active and present in several areas and production sectors as well as in learning activities that are mostly carried out by young women. Those professions that use information and communication technology (ICT) are characterized by their flexibility in their use and their presence (also the presence of women inside them) is very important for Community development.

Furthermore, an ICT profession can be considered as "creative" when it includes relations between men and women. From this, it includes other differences that can be found in a specific place (ethnic and religious differences, differences due to presence/lack of disability, generational differences etc.). The more attentive is a profession towards these differences, the more active is its presence in local development.

An ICT profession can be considered as "creative" when it is in the middle of both humanistic and technical-scientific competences (in social management, protection of the environment etc.). Professions that show a stronger mixture between "the two cultures" are very important for development as they focus the attention on technological aspects and people's different problems. As a result, they shift the attention towards a model of equitable economy.

Finally, a profession can be considered as "creative" for community development when its spread depends on local bodies' policies particularly aiming at improving the quality of life (social, health, environmental, cultural and tourism policies). This higher attention of professions towards quality of life represents a factor that leads women to carry out these activities. Concerning this subject, we should notice that ICT professions cause considerable investment in research (an example is ICT related to artificial intelligence to support motor and mental disability) in assistive technology area. These professions contribute to improve the quality of disadvantaged groups' assistance



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This publication has been realised under the project

“Women and Job Mobility: Obstacles and Solutions for Women in the ICT Sector”

co financed by the European Commission,
Employment, Social Affairs and Equal Opportunities DG
within the framework of the
European Year of Worker's Mobility 2006

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