Women in ICT: The opportunity of incorporation in the International Labor Market

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Abstract. The ICT is a key sector for developing contemporary economies and it entails an opportunity for increasing the employment rates internationally. Women were traditionally underrepresented; therefore we need to reinforce their role in the international labor market. Before the implementation of positive actions, we need to know what is the situation and experiences of women in ICT workplaces. Through the Spanish Labor Force Survey we analyze the evolution of women. Despite economic crisis, data shows that women have as good job prospects as men in the ICT labor market. However, women present higher level of qualification than men in the same category which may be interpreted as a sign of gender discrimination. Significantly, women also display more critical opinions than their male colleagues according to labor conditions in the workplace.

Keywords: Female talent; incorporation of women in ICT; labor conditions.

1 Introduction

The low number of women in ICT was widely discussed in the literature [1,2,3,4] as a dysfunction of the education and the labor market. Apparently, women are less attracted to these areas of knowledge, which is related to small number of female workforce in ICT sectors. In consequence, male dominated profession contributes to unfriendly environment for women and it is the cause of their expulsion or adoption of masculine roles [5, 1, 6]. The role of women in the workforce is traditionally linked to insecurity employment and gender pay gap [7]. The second shift of women [8] entails a significant barrier for women who should develop great careers and motherhood at the same time during their entire life course. Labor conditions of ICT sector affect women seriously, total availability, long-hours and extra work, make difficult the work-life balance [9]. On the contrary, the lack of women in technological areas evidences social injustice, particularly, in regards to the importance and great opportunities of the ICT sector for future employment [10].

Women should be incorporated in these technological professions that reflect high expectancy of employment success, level of salary and social recognition. During the last decades, multinational corporations have implemented mentoring and attraction programs with the aims to incorporate more women in their professional staff. But these positive measures have shown limited results; the percentage of women in private organizations remains relative low, around 20%, and closer to management and commercial positions rather than technological ones. In summary, we need to collect more information about positive incentives for making more attractive the ICT jobs to women and how we need to tackle barriers in the workplace. Besides, we need to train women from their early stages, as when they choose academic degree or branch of knowledge, in order to promote interest in the technological world. Measures such as presenting positive role models are recently being increased in Northern Europe Universities, but a stronger effective plan needs to be implemented. Even though this part of the problem is also important to tackle, we are going to focused on their situation once they have entered the workforce.

The approach of this work responds to the purpose of the creation of feasible data that support the posterior phase of this project focused on applied solutions for attracting women into ICT sector. Particularly, this work analyzes working conditions of women in the ICT sector according to the Labor Force Survey (LFS). Some methodological notes are necessary from a statistical point of view. We use the classification of technological occupations (National Classification of Occupations CNO) by the National Institute of Statistics, as proposed by the ILO in 2011. Occupational categories concerns professionals information technology (code 27 of the National Classification of Occupations (CNO) 20) that comprises analysts and software designers and multimedia specialists databases and computer networks; technical positions occupations in science and engineering (code 31); technicians and information technology and communications (code 38) that comprises operations and information technology user support, computer programmers and technicians audiovisual recording, broadcasting and telecommunications.

2 Women in the ICT labor market

The ICT employment occupies a relative small percentage of the total Spanish employment (4%), but the economic importance multiplies its relevance. The representation of women in these groups of occupations is very limited 0.6% in comparison with male population comprising 2.1% with respect to the total population. Focusing only on the ICT employment, women represent around 24% of the total employees in this sector of occupation. A characteristic of the ICT sector is the high level of employment for both men and women professionals; the unemployment rate reaches 3.2% very similarly for men and women (according to EPA-2015). The evolution of employment and unemployment rates shows steady situation even if Spain was hardly affected by the economic crisis. The economic crisis destroyed 3.5 million jobs, mostly in two activity sectors building construction and specialized construction activities. Consequently, the ICT sector presents a wealthy situation that positively affects men and women involved in these professions.

Historically evolution of female workforce displays differences in occupation among age groups of men and women ICT professionals. Women between 46-64 years old present the lowest percentages (0.6%). The youngest women (25-30 years old) are 2.5 lesser represented than men in the same age group. This data suggest slow integration of women in the ICT labor sector despite increasing number of female graduates.

Table 1. Rates of employment in ICT sector by age groups

	Men	Women	Total
25-30	3,9	1,4	2,6
31-45	5,3	2,0	3,7
46-64	2,8	0,6	1,7
Total	3,6	1,1	2,4

Source: EPA 2015, INE second term

The rate of unemployment in the ICT is lower than the global unemployment rate in Spain. Therefore, we address the insecurity in the labor market for both women and men percentages. The results indicate similar percentages of temporary employment and part-time employment. With regards to temporary employment, women show slightly differences (13.8% men; 15.8% women) but the expected effect is very small and non-statistical significant. Part-time rates are similar compared to differences of men and women rates from other sectors. However, we explore reasons why men and women are part-time employees, displaying women argue family to a greater extent than men (33.5% women; 4.5% men).

Table 2. Gender differences regarding employment typology

	Men	Women	Total
< 35 hours	5.2	4.7	5.1
Temporary jobs	13.8	15.8	14.3
Part-time	3.4	5.5	3.9

Source: EPA 2015, INE second term

A factor of unfriendly environment entails long-hours working. The percentage of employees working overtime in the ICT sector is higher than other activity sector. Women and men work the same amount of extra-hours, being women slightly above (9.5% men; 9.8% women). It indicates that women develop the same work than men and a disadvantage for professional mother. In fact, women express that they would like to work fewer hours than they actually do, even accepting a pay cut. 9.8% of women in the ICT sector would accept work lesser time compared to 4.6% of male counterparts. Moreover, 64.2% of women prefer to work accepting a pay cut meanwhile 56.7% of men prefer to work more hours. It shows different attitudes regarding work and life of men and women in the ICT sector and how male culture plays a negative role for women involved in these workplaces.

We may conclude that work-life balance is a handicap, despite effective policy, because different attitudes of both employees disfavor women employees. With regard to family care, the Labor Force Survey includes some questions about number of children under 17 living at the same home of the interviewee. Although the percentage of men and women with children is very similar, women living with a child (47.7%) are slightly higher percentage than men (42.5%). These results seem to suggest that women compromise their time in care issues more than men. And, anyway, women present different priorities regarding life. While men seem focused on work, women need sharing daily life in working and housing and caring tasks.

Table 3. Men and women with children under 17 years old

	Men	Women	Total
ICT occupations	42.5	47.7	43.8
Other qualifed occupations	49.4	51.8	50.5
Non-ICT/ qualified occupations	50.4	56.7	53.3
Total	49.6	55.3	52.2

Source: EPA 2015, INE second term

Previous works suggest that women make greater effort than men to achieve similar positions because of male dominated environments where their work is undervalued by gender stereotypes or they are invisible to bosses,

colleagues and clients [2, 11, 12, 13, 14]. As a result of that, women presents higher credentials in education than men professionals. The Labor Force Survey allows investigating over qualification using several indicators. Data suggest that women are more qualified than men in the ICT sectors using every indicator. A group of people is overqualified when it shows more than one standard deviation from the average years of schooling of total population included in the same occupation. Through this indicator, women in ICT display over qualification: women show a ratio almost double (19.4%) of their male counterparts (10.7%) both in each sex group. If we consider over qualification as a deviation of the average number of schooling years, data display that 17.7% of women and 13.3% of men were upper general population. The gender difference is significant statistically but the relationship between both variables is weak.

Conclusions

The results of this work confirm primary findings of qualitative studies, concerning major obstacles of women in male predominated environments. The main problem suggested by women respondents is extremely demanding environment of ICT sector regarding hours of dedication and stressful climate that clashes with care roles. However, this work also confirms the opportunity offered by the ICT sector for qualified women. Firstly, the employment rates should be an incentive for women who present higher rate of unemployment than men in the global labor market (although it depends on wiping out gender bias in the workplace). The ICT sectors are unaffected by economic situation. Unlike construction and banking sectors, this sector shows steady rates of employment. Therefore, women employees also share this positive evolution of the employment rate.

Although the population employed in this sector accounts 4% of total employment, it expects a positive growth in the future which opens new avenues to qualified professionals. This prospect should encourage young women to involve in this educational background and vocational training. The higher education and the labor market should adapt their structures in order to train more young women into the traditionally male environment and encourage them to develop stimulating careers in this sector. Data suggesting that encouragement of women's technological vocations depends on employment policies that reverse the segregation in the labor market and turn into friendlier workplaces. Although employment conditions comprise a great number of work-life balance measures, the opinions of women in the Labor Force Survey suggest it is a stressful context for women workers. This impediment is naïve because it is the most innovative sector, with total flexibility and creativity as fundamental pillars of working hours. The challenge of the ICT sector will be to implement effective measures to adapt its environments to women demands, relaxing daily work life in the institutions.

Over qualification points to the persistence of gender bias and discriminating situations in the ICT labor market. It points to fight against employers (headhunters and other human resources recruiters) prejudices related to gender and age. Our suggestion entails training courses for reinforcing abilities and competences of young people. Mentoring programs seem very positive for creating a confidence culture in the companies and from the bosses to the young people. Moreover, mentoring programs create more effectiveness if there is a transfer from business experience to higher school curricula, in order to break the gap between learning and professional experience. A jointly work together, from private to public spaces, benefits the global competitiveness.

The management of working time in the workplace is a main factor that makes a difference between men and women. Women prefer to work short time even despite pay cut that supports the idea of increasing pressure in professional careers. Care responsibility is a well-known cause of delaying position of women in the labor market, but we suggest that we should consider other factors related to more relaxing conceptions about life and health. The gender gap comes not only from personal choices but also from dynamics of business world that face contemporary conception of life. In our view, companies should deal with a different conception of working-time to attract female talent. Women accept fewer working-hours, even if they receive low wages, while men feel the need to a lesser extent. These differences between men and women create asymmetries even with sensitive gender policies.

Diversity policy is considered an opportunity to create new perspectives and solutions in the ICT sector. Some international corporations implement diverse models of management for attracting talent concerning the

attraction of diverse people (according to their origin, sexual orientation, religion, culture, gender and other characteristics). However, the effectiveness of these policies lay on the culture change rather than the simple incorporation of people. Diverse talent entails the decision of accepting a different knowledge that inspire creativity and innovation. Classical structures of company concerning presentialism and rigid hours would reach its limit. By contrast, the organization of culture tends to erase differences between men and women workers (or diversity employees) because of a strong tendency to respect the aims of the corporation.

Although the population employed in this sector accounts for 4% of total employment expectations remain positive and growth in the future. Therefore, training of qualified personnel in this area stands as a priority for the future of our society. In this direction, we must ensure greater participation of women, so far only reached 24%.

References

1. Cockburn, C. (1983). Brothers: Male Dominance and Technological Change. London: Pluto Press.
2. Kvande, E. (1999). "In the Belly of the Beast: Constructing Feminities in Engineering Organizations". The European Journal of Women's Studies, 6: 305-328.
3. Margolis, J. and Fisher, A. (2002). Unlocking the Clubhouse Women in Computing. Cambridge, Massachusetts: The MIT Press.
4. Castaño, C.1] (ed.) (2008). La segunda brecha digital. Madrid: Ediciones Cátedra.
5. Rommes, E., Bos, M. and Geerdink, J. O. (2011). "Design and Use of Gender Specific and Stereotypical Toys". International Journal of Gender, Science and Technology, 3(1): 184-204.
6. Bystydzienski, J. M. and Bird, S. (2006). Removing Barriers. Women in Academic Science, Technology, Engineering, and Mathematics. Bloomington: Indiana University Press.
7. De la Rica, S. (2007). "Segregación ocupacional y diferencias salariales por género en España: 1995-2002", FEDEA [http://www.fedea.net/documentos/pubs/dt/2007/dt-2007-35.pdf].
8. Hochschild, A. and Machung, A. (1990). The Second Shift. Avon Books: New York.
9. Gill, R. (2002). "Cool, creative and egalitarian? Exploring Gender in Project. Based New Media Work in Europe". Information, communication and Society. 5(1): 70-89.
10. Directorate-General for Internal Policies (2015). "Encouraging STEM Studies for the Labour Market´. IP/A/EMPL/2014-13 PE 542.199.
11. Faulkner, W. (2007). "Nuts and Bolts and People: Gender-Troubled Engineering Identities". Social Studies of Science, 37(3): 331-353.
12. Faulkner, W. (2009). "Doing Gender in Engineering Workplace Cultures: II. Gender In/Authenticity and the In/Visibility Paradox". Engineering Studies, 1 (3): 169-89.
13. Faulkner, W. (2014). "Can Women Engineers be 'Real Engineers' and 'Real Women?' Gender In/Authenticity in Engineering". En Gender in Science and Technology. Interdisciplinary Approaches, Waltraud, Ernst and Ilona Horwath, 187-203. Bielefeld: Transcript Verlag.
14. Vergés, N., González, A. M. and Almeda, E. (2014). "Doing and Undoing Genders and Information and Communication Technologies". En Proceedings of the XV International Conference on Human Computer Interaction (Interacción '14). ACM, New York, (80): 2. DOI=http://dx.doi.org/10.1145/2662253.2662333.