GUIDELINES TO INCREASE AND RETAIN WOMEN IN ICT

eSkills

eSkills Malta Foundation

Contents

Introduction and Purpose

Throughout history, the roles of men and women in society, the family and at work have not been structured in the same way. Women have often been denied the opportunity to change their unequal position in the world. Although society is constantly evolving there still exists a certain gender imbalance which has led to many negative effects in the labour market. The purpose of this document is to expose this imbalance, and to propose possible solutions to a small sector of the workforce, namely that of the ICT sector.

These guidelines are aimed at all stakeholders who may have concerns about the low percentage of women in the ICT sector. The relevant stakeholders can be small, medium and large enterprises together with NGOs, gender equity advocacy coalitions, the media, educators, career advisors, the government and decision makers. The introductory part of these guidelines provides a short summary of facts and statistics that describe some issues that women face in the ICT sector, and then suggests possible reasons why women are underrepresented in this area. The second part of the document provides guidelines that may be adopted for increasing and retaining women in the ICT sector.

Facts and Statistics

The European Commission repeatedly claims that the EU is facing a potential crisis in human capital which can endanger its ability to be competitive in world markets. Although the unemployment rate in the EU amounts to 8,5 % in 2017, there are branches of the labour market that are faced with a drastic scarcity of skilled employees, and many job vacancies are not filled for months or years. The ICT sector is one of such sectors. Furthermore, the ICT sector is unique since it represents an important sector of the European economy, contributing 4 % of the GDP. The ICT sector in the EU "is above €580 billion and represents close to 10 % of the overall added value of industrial activity." It is also highly innovative, bringing about more development and changes into our lives than any other branch of business.

"The Boston Consulting Group (BCG) predicts that across the 25 major economies representing 80 per cent of world GDP, shortages of human capital with relevant skills will result in a loss of $10 trillion in GDP between 2020 and 2030." It is predicted that Europe "may experience a shortfall of up to 756,000 ICT professionals by 2020." One of the main reasons why the sector suffers from such a lack of labour is that women are not fully engaged in the sector. Only 28% of workers in the ICT industry are women. "The G20 Leaders in November 2014 committed to reducing the gap in participation rates" of women "by 25 per cent by 2025, bringing 100 million more women into the workforce and adding one trillion dollars to global GDP."

Summarised below are some facts and trends recorded in the ICT sector concerning women.

1. Women in ICT are underrepresented both in the Technical sector and in managerial and decision-making positions, more than in other fields of business.

Women are significantly underrepresented in the ICT profession. The number has been hovering around 28% of workers, whereas in the broader workforce women comprise around 43% of all individuals in professional roles. "On average, there are almost four times as many boys as girls who expect to be employed in engineering and computing in OECD countries." In 2013, "only 19.2% of ICT-sector workers had female bosses, compared to 45.2% of non-ICT workers." In addition "only 31% of women take part in corporate functions."
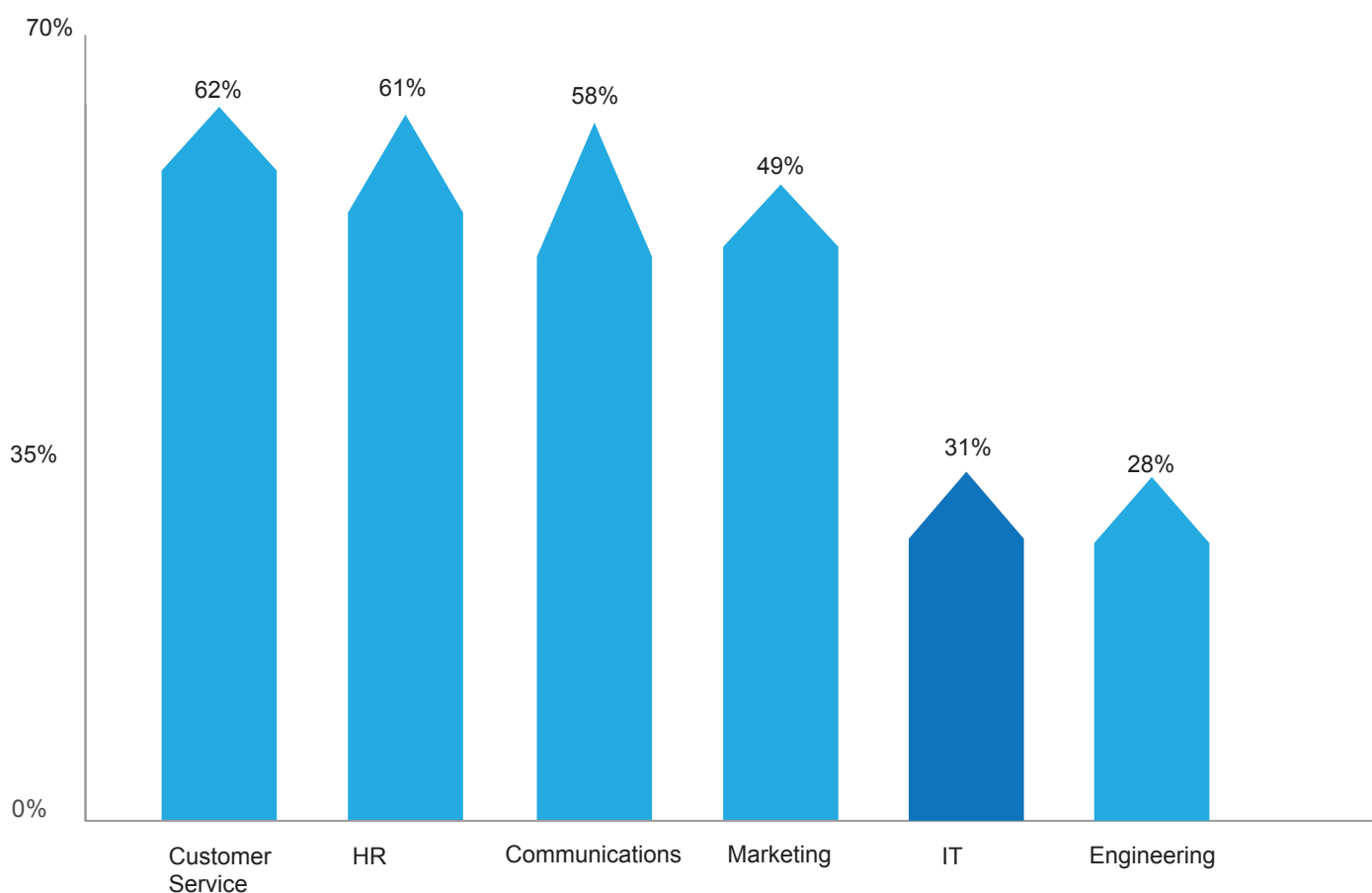
2. Women in the ICT field often quit mid-career.

"More than half of women, approximately 56% in technology related occupations quit mid-career." According to available sources, "while 20% of women aged 30 with ICT related degrees work in the sector, only 9% of women above 45 years of age do so."

3. Women neither prefer to study Science, Technology, Engineering and Mathematics (hereinafter called "STEM") nor ICT specifically.

Only 31% of women are awarded STEM degrees. In a study held in 2013, out "of 1,000 women with a Bachelors or other first degree, only 29 were awarded a degree in Information and Communications Technologies (ICTs)", when compared to 95 men. Moreover, only 4 in 1000 women eventually worked in the ICT sector.

An organisation called Girls Who Code in the US notes that "while 74% of girls in middle school express an interest in STEM subjects, when choosing a college major, just 0.3% of female secondary school students select computer science."

Women earn only 31% of STEM degrees

4. Underrepresentation has a lot of to do with women's need for more flexible hours of work to care for children, old family members and the household.

Research carried out on who have partners and who are at the mid-point of their IT career, has shown that while "79% of women have a partner who works full-time, only 38% of men have a partner who works full-time."

"Only 19% of women Managers use flexible time schedules among those who prioritize it." This is probably due to the fear that they would probably soon lose their position or there would not be a chance for career progression.

Women   **Men**
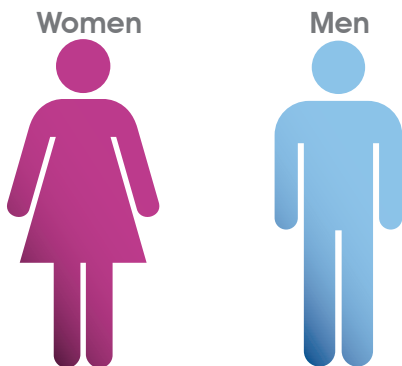
38% have a partner who works full time

79% have a partner who works full time

5. Women tend to think they are not suited for the ICT sector roles.

A report conducted by the OECD in 2015 entitled "The ABC of Gender Equality in Education: Aptitude, Behaviour, Confidence" collected data, on the expectations of school students with regard to their future careers. It shows that, on average, among OECD countries, "only 4.6 per cent of girls contemplate pursuing careers in engineering or computing compared to 18.2 per cent of boys."

Why are women less represented in the ICT sector?

Many studies have been carried out on the reasons why women are greatly under-represented in the ICT sector, and these can be summarised as follows, even if these are not exhaustive. Many of these reasons are also shared with other sectors.

a) SOCIAL REASONS

• Stereotyping and perceptions such as predominance of a male-dominated environments, isolation in the workplace, and the perception of ICT and STEM as a world of "geeks";

• Gender differences in attitudes towards taking risks, competition and negotiation;

• Women's general lack of confidence in their capabilities, reinforced by society's perception of the appropriate behaviour of women and men. This results in a lack of confidence to ask for promotions, and a belief in the existence of the "glass ceiling" in the ICT sector for women;

• The gender pay gap, which still prevails in most countries;

• A scarcity of role models in the technology spheres, in a way that, even if these role models exist, they are not communicated to the right people; and

• A considerable amount of both men and women still do not consider gender equality as a serious issue. More men should be involved in the diversity discussion.

b) SOCIO-ECONOMIC REASONS

• The presence of long working hours, overtime and extreme work pressures which are incompatible with family demands;

• The challenges in keeping up-to-date with the fast-paced ICT industry's development. This happens during maternity leave or due to the working process of a household, including the time-consuming care of children;

• The maternity leave gap and the time it takes to return to a job. This has somewhat improved to a certain extent in the EU countries in the last 5 years;

• A lack of flexi-time policies, such as telework, part-time jobs, different working hours, a priority of choice for employees who have children or old family members in care when the holiday schedule is compiled, and the possibility of withdrawing sick days or days devoted to the care of children or sick family members;

• A lack of infrastructure for working mothers, like child-care centres, nursery schools and nannies; This has lately partially been addressed by the Maltese Government;

• A lack of infrastructure for women caring for old or disabled family members; and

• A difficulty in reconciling one's personal and professional life.

Why the large difference in numbers between men and women in ICT should be seen as a problem

The problem of the low number of women in the workplace is not only restricted to the ICT sector. Women in leadership positions in businesses or politics are in shorter supply, and this is nothing new. Some countries and organisations have enacted affirmative actions or quotas as a solution, but this is controversial, because a significant part of society does not agree with forceful action. Notwithstanding this, these options can be put foward for further discussion between the relevant stakeholders.

What needs to be assessed is whether the poor participation of females in the ICT sector should be considered a problem, and, if yes, to look for the root cause of the problem. Work in the ICT sector is very demanding, time-consuming and sometimes even stressful. Sciences like Biology, Chemistry or Psychology acknowledge that women's and men's predispositions and abilities are different. Do we need to be concerned about the poor participation of women in the ICT sector or should it be perceived as "natural"?
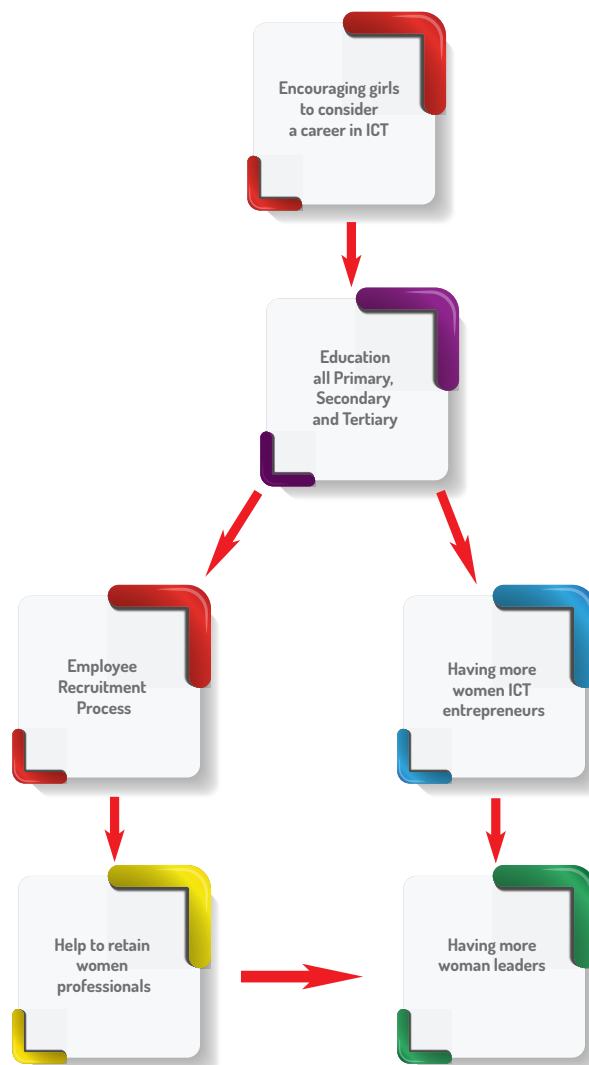
Some of the reasons for the underrepresentation of women in the ICT workforce have been recognised as problems that need to be addressed. Below is a list of some of these reasons.

- Like any other business, the ICT sector "creates" products. Every product bears the DNA of its creators and if women are missing in this process, the resulting product might be less suited for women. Since women amount to half the customer population, this should be considered as a missed revenue opportunity. Statistics show that to better target all types of customers, a mixed team of employees should mirror company's customers.

- People from diverse backgrounds "might actually alter the behaviour of a group's social majority in ways that lead to improved and more accurate group thinking'. It is suggested that "one of the best ways to boost their capacity to transform themselves and their products may involve hiring more women and culturally diverse team members".

- According to sources and data from the EU Commission, organisations which are more inclusive of women in management positions achieve around 35% higher return on equity and 34% better total return to shareholders than other comparable organisations. Statistics show that companies with boards that include women have better results in terms of finance and they also suggest that mixed boards can bring the rise of GDP of all states.

Guidelines to Increase and Retain the Number of Women in ICT

The following guidelines are extracted from best practices in Europe and the rest of the world. Best practices are those tasks and actions that have worked, and positively influenced the population of women in ICT.

Only a combination of several successful measures on different fronts can help to attain the target of more women in ICT sector. The diagram below represents a roadmap for stakeholders to focus their efforts in persuading schoolgirls and women to dispel their fears of ICT and move away from stereotypes.

Encouraging girls
to consider
a career in ICT

Education
all Primary,
Secondary
and Tertiary

Employee
Recruitment
Process

Having more
women ICT
entrepreneurs

Help to retain
women
professionals

Having more
woman leaders

A) ENCOURAGING GIRLS TO CONSIDER A CAREER IN ICT

It is clear that the ICT sector has the potential to attract more women. The main reasons why women often do not even consider a career in the ICT sector are stereotypes and unwritten social norms. Both need to be changed, which is neither easy nor a short-term task.

Microsoft ran a broad survey summarised in the document entitled "Why Europe's girls aren't studying STEM" which found that "results varied wildly from country to country. In some places, confidence is a major barrier, while in others, peer approval or lack of role models is holding them back most."

In connection with the issue of attracting girls to the sector, it is good to mention results of a study called "Women who choose Computer Science - what really matters" compiled by Google. The study's results are based on broad survey of 1,000 women and 600 men. The aim of the study was to find out what are the main factors influencing young students during their decision-making process aregarding their future career. The study's results mention four factors in descending order by level of influence:

- **Social encouragement** - peer and family encouragement together reach 28.1% of the explainable factors; peer support accounts for 11% of this and family support 17%,

- **Career perception** - this accounts for 27.5% of the explainable factors,

- **Previous exposure to Computing Science** - this accounts for 22.4% of the explainable factors,

- **Self-perceptions of one's own proficiency** in maths and problem-solving account for 17.1% of the explainable factors.

According to the study, career perception is influenced by whether girls are familiar with Computer Science and its broad applications. If they are not familiar with this, they "have difficulty visualizing it outside the narrow scope often presented in popular media."

The situation has not been the same in the past. "The US National Science Board's report "Science and Engineering Indicators for 2012" found female participation in Computer Science had declined to 18 per cent from a 37 per cent in the mid-1980s."

Various recommendations, that have been implemented and resulting in a positive impact, are mentioned below.

1 Change the perception of parents

It is wise to be aware that schoolgirls and their parents might have a distorted notion of ICT. Parents can be a strong (and sometimes the only voice) that influences the children's choice of career when deciding about their study options and, therefore, the problem is amplified when parents discourage schoolgirls when it comes to ICT. Despite ICT being mandatory in most schools, there is still a pointg when a decision is needed for ICT to be considered as a possible career subject.

Unfortunately, it is often the mothers who discourage their daughters from taking up a career in ICT because they believe that a male-dominated world is not the best career path for their daughters. They can believe that women in ICT are geeky and unable to have normal personal lives. Very often, it takes strong-willed girls to go against the wish of the parents. Hence, it is vital to improve the image of the ICT sector as perceived by parents.

2 Include parents in activities

Parents and their social encouragement need to be nurtured and it would therefore be advisable to include parents in activities designed to entice and encourage girls to choose ICT as a career.

3 Acknowledge past parent mistakes

Similarly, it is important for some parents admit their past mistakes and become ambassadors who can flaunt the benefits ofhaving ICT as a career choice for girls. In this way, other parents will come forward which would increase the number of girls taking an ICT Career.

4 Familiarise children with ICT from a young age

According to a study called "Women who choose Computer Science - what really matters", conducted by Google, career perception is influenced by how familiar girls are with Computer Science and its broad applications. If this familiarity is not present, they would have difficulty visualising it through the narrow scope often presented by popular media. Computer Science and ICT need to be linked and connected to the everyday use of ICT, including the fun parts, like social media, the Internet or computer games.

A quantitative survey among 11,500 girls in 12 countries, which was part of a Microsoft project entitled "Why Europe's girls aren't studying STEM") highlighted that there is a short "window of opportunity to foster girls' passion in STEM subjects" before interest starts to decrease. The attraction reaches its maximum at an age between 11-14 and then starts to sharply decrease. "Additional questions revealed that the interest in humanities subjects drops off at the same age, but that girls regain interest in them much more quickly, compared to STEM subjects."

5 Change the perception of the Media

The media and entertainment industries that target children and young people are other important stakeholders in creating a better image of the ICT sector. Their help is essential to change the stereotype image of women in movies, TV serials or cartoons. Moreover, more gender-neutral products would help to change commonly shared perceptions.

6 The self-presentation of the ICT sector

Survey results recorded in paper called "Why Europe's girls aren't studying STEM" proved that even young girls "acknowledge that men and women are treated differently in STEM jobs – and this perceived that inequality is actually putting them off further from STEM studies and careers." Women who are already in STEM or in ICT specifically can serve as advocates for their professional choice. Female role models should be women who can present themselves as people who faced similar struggles.

The ICT sector has a lot to offer to women, it is just necessary to promote it accordingly. A career in the ICT sector can bring to woman their necessary independence in financial terms. According to data of the European Commission, "women who work in the ICT sector earn almost 9% more than women in other parts of the economy, and also have higher flexibility in arranging their working schedules and are less susceptible to unemployment."

Some best practices

- When the ICT sector organises events for the public (or for children), it should make sure to have women as its speakers. Similar advice was mentioned in one of the Executive summaries of the European Commission on the topic of women in the ICT sector: "Dissemination activities should not exclusively target women; men should be involved in all actions. The increase of participation of women in general activities of the industry (congresses, events, workshops, etc.) should be preferred over the organisation of specific events only for women."

- Events with children regarding a possible career in ICT should emphasise the fun and interesting applications of ICT with which children can identify with, such as Facebook, computer games, mobile apps, smartphones or the Internet.

- Documentaries or movies about women in the STEM can serve as an inspiration. An example would be a recent American movie called Hidden Figures, which highlight the story of Afro-American female mathematicians who served a vital role in NASA during the early years of the U.S. space program. In addition, Youtube also has a considerable number of videos about women in ICT.

- The aforementioned survey led by Microsoft found that "girls become more interested in STEM once they're able to conceive what they can do with these subjects, how they can be applied to real life situations and how relevant they might be to their future." To sum up, what "young girls love is creativity and practical experiences."

B) EDUCATION

Children spend a substantial part of their time in the classroom with their teachers who influence them significantly.

It is therefore important to tackle this part of the life-cycle

1. Educate the teachers to use gender neutral communication

Many teachers begin gender stereotyping the young unconsciously. It should be one of the roles of teachers to suppress some widespread stereotypes. What makes a situation more delicate is the fact that a large number of primary, and often secondary schools teachers are women.

2. Teachers should be closer to the ICT industry

Many teachers are not fully aware of the various specific roles or the applicationof ICT. Industry NGO's should organise extracurricula ICT experiences and design seminars and gender neutral and which can inform children of the different career paths.

It is essential to strengthen the links between different stakeholders, inkluding industry, government, NGOs and teachers who are teaching informatics, Computer Science or Information Science. This can be augmented further if women from the ICT field can take part in classroom sessions with teachers on these subjects so as to encourage girls to continue with their studies or a career in ICT, to positevly impact the future ICT labour market.

3. Set up Computer Clubs for girls

Not everyone may agree with this concept because this may give the impression that girls are being treated differently from boys. However, considering that the number of girls taking ICT as a career is very low, then this initiative is simply boosting girl participation.

Computer Clubs are also useful in providing girls with certain information about cyber bullying or about the risk of internet predators. According to "Guardchild" – Protecting children in the Digital Age "girls are more likely than boys to be the target of cyber bullying".

Some best practices

- The Australian Computer Society recommends developing "an appropriate suite of programs for classroom teachers to skill them in delivering digital technologies." Other recommendations focus on aiding teachers to develop course content, structure and delivery which encourages and support better female participation.

- One of the European Commission's recommendations urges the inclusion of women coming from diverse backgrounds when creating training fprogrammes for unemployed people. Such a model is followed, for instance, by a Digital Academy called "Czechitas" that promises to help women to change their career into data analysts. The Digital Academy guarantees that, in their lectures, "20% of the seats are allocated to mothers on maternity leave or with children up to 15 years old, who wish to return to work."

- Since 2005, more than 19,000 girls in over 1,500 British schools have experienced TechFuture Girls. TechFuture Girls Clubs make it easy for teachers to inspire 9-to-14-year-old girls to learn about technology. Girls can experience the fun side of the digital world through creative projects based on real-life challenges from industry. Schools typically use the resources to run informal sessions lasting between 30 to 60 minutes, during lunchtime or after school. The resources are mapped to the KS2 and 3 curricula, and give girls the opportunity to work with their friends on activities themed around topics such as creative coding. Through these activities, girls not only learn skills such as coding, cyber safety and blogging but also softer skills such as teamwork and communication.

C) RECRUITMENT OF WOMEN

Family life has changed drastically over recent years. Up until a few years ago, it used to be considered standard for men to concentrate on sustaining the family financially, and for women to manage the household, children and older family members. Nowadays, young people are encouraged by the mainstream poltical statements to uphold the more equal distribution of the duties between men and women, it is now normal to find men who expect that society and employers should provide them with the opportunity to spend more time with their families.

The following initiatives are expected to influence gender equality in the labour market.

1. Instigate the necessary changes in the Labour Laws

This is probably the most obvious initiative, but arguably it may be considered the most important, since it sets the tone for social and corporate environments. It must be ensured that labour laws offer equal treatment, benefits and opportunity for women, without forgetting the important family role that women may want to exercise, while also balancing this with their sought-after working life and profession.

2. Offering a women-friendly work environment

The ICT industry's entrepreneurs should carry out marketing campaigns to instil better awareness and to promote ICT working environments which are suitable to women's needs, such as the use of company children groups, nurseries and part-time jobs. Moreover, businesses should disseminate more stories of successful women working in ICT that who managed to reconcile their family and professional life.

3. Change the mind-set within organisations

Organisational change can only happen when there is a change in management's mind-set. Management must be proactive when it comes to its equal-gender and Human Resources (HR) policies and not be reactive, acting only when there are infringements. They must model the behaviour they want and lead by example.

4. Measure performance through outcomes

The efficiency of an employee, whatever their gender, must not be judged only by the number of hours they work. It should be broadly acknowledged that efficiency of an employee is equally by factors such as the employee's experience, decision-making, ability to prioritise work assignments, level of procrastination and successful task execution.

In today's working world, it is quite normal for women to work less hours due to family-friendly measures. Conversely, it is well known that individuals working in the ICT industry may need to work long hours. Many of those who work less hours feel that their value as an employee is not estimated as being the same to that of those who are working full-time. ICT organisations need to improve how they manage employee performance and concentrate on strategies that focus on efficiency, engagement and productivity that drive business value. For such a change of mind-set, people need to believe in it. Hence ICT organisations need to improve the ways in which they monitor outcomes and the results produce by their employees.

## 5. Exercise great care in the wording of adverts/use the right wording in adverts

It is not common that in adverts for ICT vacancies, the wrong signals are sent to prospective female applicants, for example, "the company is looking for man" rather than a woman. Adverts must be phrased to be more gender neutral and thus needs to be reviewed for this.

The wording in recruitment adverts such as the "ability to meet aggressive deadlines", "willingness to proactively lead managing tasks", "eager individual", may not be very inviting to some women. The fact is that many ICT companies prefer an employee to be cooperative, able to work both individually and in a team, assertive and concerned with delivery of outcomes on time and at the requested quality. Such wording may be more appropriate for recruitment adverts.

Some women may also seek additional values in their careers, such as the possibility to reconcile their personal and working life when they have children.

6. Publish equality targets
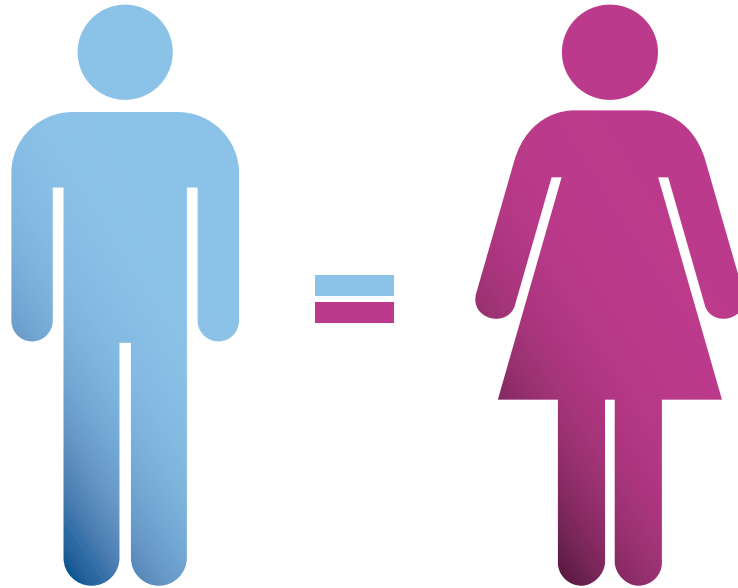
ICT Companies might opt to make transparent their Equality targets in the form of the percentage of men and women working in specific ICT-related sections of the company, if they have any such targets. This might strengthen their commitment to work towards reaching these targets.

7. Have diverse panel of interviewers

ICT organisations must strive to have interview panel members from both genders, and, if possible, coming from different walks of life. This will minimise the effect of the unconscious bias which occurs during the recruitment of various ICT roles.

Some best practices

- According to Jon Andrews, Head of Technology and Investment at PricewaterhouseCoopers, the number of woman recruited into the technology business increases when action is taken, rather than by simply talking about it or promoting it. He says that "one of the biggest challenges is that we´re great at getting girls into our HR, commercial and legal functions, but we need to do so much more to get them into technology itself."

- All job announcements at Motorola Poland include "women are particularly invited to apply". Employees are given an extra bonus if they inform a female friend about an open position, "and recruitment managers with high women recruitment numbers also receive a bonus".

- The Australian Computer Society in one of its papers recommends that organisations should be transparent and publish equity targets and track performance against those targets.

- Rush Shaw, a founder of Tech London Advocates, is of the opinion that affirmative action in organisations, such as implementing quotas for engaging women, "is the best way to up the pace of change in the industry, although he is aware that many disagree with these types of actions."

• Barclays runs programmes that aim to increase the diversity of employees. An example is an apprenticeship scheme for people over the age of 50. The Barclays Director for Global Diversity and Inclusion Wendy Papworth, highlights that doors should not be shut for older women just because when they were younger they would not have done the right A-level or degree subjects. There are lots of roles in tech where mathematical, engineering or deep gamification programming skills are not needed.

D) THE RETENTION OF FEMALE EMPLOYEES

It has been referenced in number of papers that more than half of the women in technology related career roles quit mid-career. Many of them leave the sector entirely. Slowing down this leakage is one of the most important tasks that ICT sector can implement.

Without any doubt, many ICT women professionals quit their job so that they would have more time for their families, hobbies or simply themselves. However, there is still a significant number of women who do not intend to quit their job, but circumstances force them to do so. Initiatives that can be used to retain women in ICT are mentioned below.
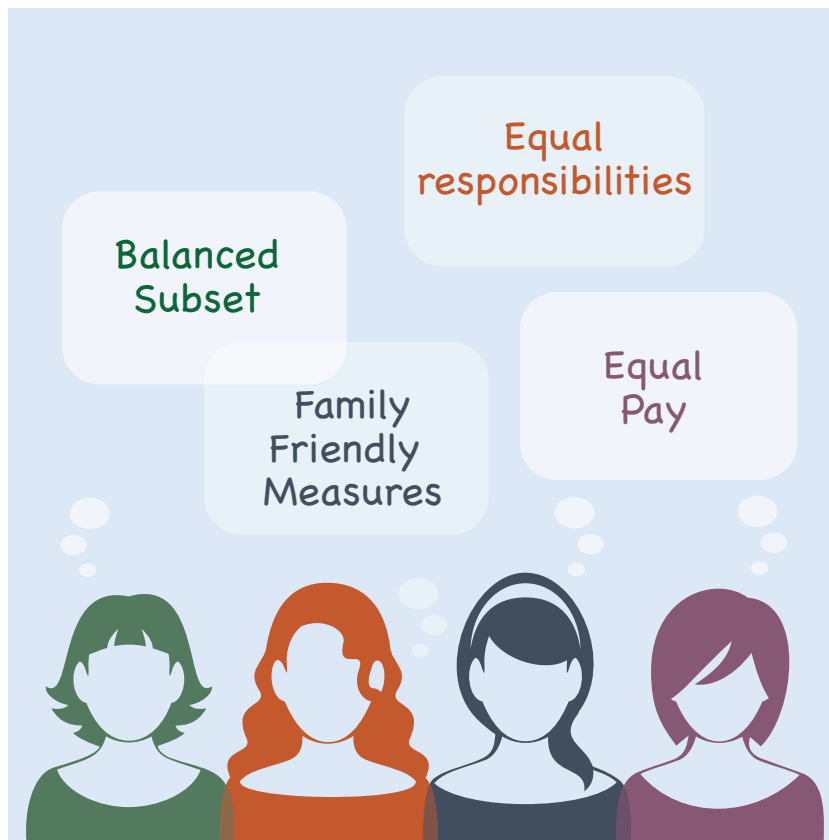
1) Gender-balanced environment

ICT teams who have a balanced subset of both men and women attract more women to them as these give an impression that the organisation is impartial when it comes to gender. This structure entices women who perceive such a corporate environment to be more women-friendly.

2) Equal opportunities

Invigorate female ICT practitioners by giving both women and men equal responsibilities, as well as the same sensitive, large, interesting and important projects. It is not uncommon to have a situation where the best projects are given to men by men!

3) Women-retention policies

Initiate programmes that help women to remain in the workforce when they have children, such as the inclusion of flexible hours, remote working, or a programme to stay in touch with the organisation during parental leave. These opportunities should be accessible not only to mothers but for fathers as well.

4) Equal pay

Very often, equal pay is taken for granted. However, we still find many organisations that have a disparity in pay by gender. The old-fashioned mind-set that women are not the bread winners still resonates with some people. Discrimination when it comes to pay, for whatever reason, is one of the main reasons why people change jobs, and this includes gender discrimination.

Some best practices

- PricewaterhouseCoopers has a 'Woman in Technology programme', including a maternity programme that provides women with "buddy" who helps with their transition back into work after having a baby. The scheme also allows students to shadow female members of the team.

- At SAP a "Stay-in-Touch" Programme helps employees stay connected with the company during parental leave. The programme provides information regarding changes and developments in their department and the organisation as a whole to employees who are on leave. "Furthermore, they also have mentors who provide regular communication and information exchange to facilitate the process of returning to work."

- The Australian Computer Society recommends the review of parental leave processes and outcomes and to stay in touch with those on parental leave, to monitor career progression post parental leave in order to identify cases when roadblocks seem to be occurring, and assess the appropriateness and affordability of child-care options. Notwithstanding this , keeping-in-touch programmes need to be arranged sensitively, respecting women`s maternity.

After Maternity leave women can enjoy flexible working hours, specific breaks for breast-feeding and teleworking

- Since 1991, the University of Malta has established a Gender Issues Committee with the aim of focusing on gender issues. The Committee is responsible for the definition, implementation and management of gender policies. Through this Committee, the University now provides a childcare service for its students and staff. The Committee uses internal and external media to promote the activities and success of women researchers in the University. Furthermore, the Committee monitors complaints from University staff and students regarding gender discriminatory practices and recommends appropriate action.

- Enterprise Motorola Poland was successful in hiring and keeping a high number of women for their ICT departments. According to Motorola internal policies, all women returning from maternity leave are promoted when they come back. Additionally, "after maternity leave women can enjoy flexible working hours, specific breaks for breast-feeding and teleworking." "Employees can refuse travelling, and working hours are very stable, which allows a good balance between personal and professional life."

- The Australian Computer Society recommends fundamental changes in policies on flexible hours. They suggest to employers or managers to ask themselves "What work can't be done flexibly?" instead of "What work can be done flexibly?"

- Motorola Poland continuously endeavour to improve its system and carries out regular surveys and interviews among all employees to know the needs and problems they face at the work. Some questions in these interviews are specifically adapted to women. Also, when a female employee leaves the company, she is asked specific questions in her exit interview regarding equal treatment. The company also has an internal telephone service to report harassment cases, bullying or unfair treatment in an anonymous way.

- PricewaterhouseCoopers "tries to engage its workforce on the issue of diversity by offering reverse mentoring, whereby young women in the business mentor men at director and partner level so as to make them aware of what it´s like to be a woman in the IT industry."

UNIVERSITY OF MALTA
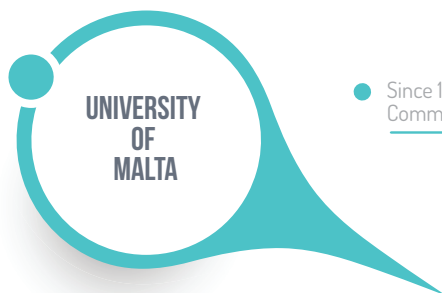
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MOTOROLA POLAND

AUSTRALIAN COMPUTER SOCIETY

The Australian Computer Society recommends fundamental changes in policies on flexible hours.

E) MORE FEMALE ICT ENTREPRENEURS

Before this paper starts to provide information and best practices on the issue of having more female entrepreneurs, it is important to first answer the question of why it is advantageous to support female entrepreneurship. This can be best shown in the case of the United States where female entrepreneurs are more active in ICT sector than their European counterparts. According to the Kauffman Foundation report, "since 1980 virtually all net job creation in the United States has come from companies less than five years old."

"Between 1997 and 2015, the number of businesses in the US increased by 51 %, and the number of female-owned firms increased by 74 % - a rate 1.5 times the national average." In the US where female entrepreneurs are emerging more when compared to the EU average, new female entrepreneurs are one of the engines driving the US economy.

Female entrepreneurship in ICT sector has value not only because of positive outcomes for society but also because of outcomes for female entrepreneurs themselves. According to a survey conducted by the European Commission, ICT entrepreneurship is very positively evaluated by females who have chosen this career path. Overall satisfaction with their job and a good feeling about achievement following well-executed work were higher among female ICT entrepreneurs than among other female entrepreneurs or men entrepreneurs. Moreover, female self-entrepreneurs were on average better paid than female employees in the ICT sector. However, a drawback connected with female entrepreneurship that is commonly mentioned is that larger responsibility comes hand in hand with larger commitment. Women entrepreneurs working in ICT sector have reported that they feel stress in their job approximately in 10 % more cases than their counterparts in other non-ICT sectors.

Despite a rather positive feeling among women about their entrepreneurship in ICT, the number of women who tend to decide to be entrepreneurs in the ICT sector, compared to other sectors, is still very low. Only 19.2 % of women are entrepreneurs in the ICT sector, compared to the average female entrepreneurship in all sectors which amounts to almost 54%. The number of female entrepreneurs is even lower than average of women working in ICT as employees (34.1%). Some barriers that women face when taking up entrepreneurship include the access to financing, a small network of contacts, lack of confidence of these prospective entrepreneurs, and their access to new technologies. The latter is prevalent in transition countries. However, even in developed countries prospective entrepreneurs in peripheral parts of the country can face problems with their access to the newest technologies.

Some best practices

Best practices of decision-makers

Access to capital

- Create systems of support strategies to micro and small entrepreneurship
- Create specific capital seed programmes for female entrepreneurs
- Improve access to venture capital programmes

Access to the newest technologies

- Support and promote viable technological incubators, hubs and accelerators

Access to knowledge

- Support access to entrepreneurial or business skills training/ business laboratories/ mentoring (such services provide for instance WeHub)
- Promote successful role models (examples of successful entrepreneurs provide EY Entrepreneurial Winning Women programme, the website of WeHub or UNECE virtual Portrait Gallery of Excellent Women Entrepreneurs)
- Back private initiatives focusing on learning and training of unemployed women or those who want to change their career to work in the ICT sector.

Best practices of universities and vocational schools with ICT programmes

- Include in syllabuses entrepreneurship skills and basic skills needed to administer a company

- Promote the idea of entrepreneurship in the ICT sector, repeat to your students that when they gain necessary skills, it is easier to start business in ICT than in other sectors as programming or designing can be done from a professional PC anywhere

- Encourage women to take control of their careers explaining to them that as self-entrepreneurs, they can adapt rules and working habits as desired

- Show students how local ICT hubs, incubators or accelerators work and what they can offer

- Inform and encourage students to use crowd-funding platforms, if they think that they have a viable idea

- Help students with networking when necessary

Best practices of other businesses

- Help women to expand their professional networks by gaining contacts that can be valuable for them, a good network of contacts can encompass corporate leaders, investors, customers, suppliers, advisers, potential business partners, strategic alliances or simply other entrepreneurs;
- Include and introduce women entrepreneurs in business networking;
- Choose the most promising female start-ups and provide them with entrepreneurial training or simply assist them during the beginning of their business;
- Offer work experience or training to those women who are thinking about starting their own business;

F) MORE WOMEN LEADERS

Many women still believe that they will not be promoted to other levels when they work on a flexitime. A considerable number of women believe that there still exists a "glass ceiling" above which almost no women have access to, and to reach this "glass ceiling" they have to work twice hard as the average man. This demotivates women as it is not clear what their organisations are doing to support their advancement especially to leadership positions. Some of the initiatives below are thought to entice women to take leadership roles.

1. **Pay Gap**

   Avoid the pay gap between men and women. Organisations must structure career positions, promotions and salaries in the same way across the board and base these on equal performance education, skills and experience within the company.

2. **Board Level**

   Diversity at leadership positions, including at board leve,l is important. This automatically gives women a voice when needed.

3. **Performance reviews**

   Leadership and recruitment training should be well reviewed to make sure it does not project any unconscious bias. In fact, there should be training for 'Unconscious Bias'.

4. Women ambassadors

Actively seek and promote Women Leadership Ambassadors. This will encourage, entice and nudge women to take on the challenge when it comes to leadership positions. There are many examples of this, and these ambassadors (both men and women) need to be promoted.

5. Encouragement

Encourage promising women already working in company to ask for promotion or to take part in the recruitment of management. Sometimes even very talented women lack confidence.

6. Give advantages to women

In management recruitment process, if both candidates are equal, give preference to the less represented gender. Not everyone would agree with this, but this could help in achieving gender targets.

Conclusion

These Guidelines are not meant to be exhaustive, because there are many studies, initiatives, policies and best practices that are being compiled. However, this document could serve to inspire organisations to engage into a continuous dialogue on the subject, and to take it more seriously. ICT needs women to be part of its entirety.

In fact we cannot reach the outcomes that we seek unless we are successful in increasing the number of Women in ICT.

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