

Increasing the Participation of Women in Aerospace – A Review

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Abstract

Aerospace is not a gender-balanced sector thus being a consequence, albeit not exclusively, of the existing gender stereotypes in education as such the factors that affect the professional career of women which may not be too apparent in childhood but may have effects in secondary school and university. Several aspects influence the participation of women in Aerospace. The implementation of interventions that could enable substantial and sustainable changes regarding the increase of women interest in the aerospace sector, improving, at the same time, the women's self-confidence in STEM (Science, Technology, Engineering and Mathematics) subjects is needed.

1. Introduction

Nowadays, the transport sector plays a crucial role in the effective working of the EU economy providing 10.5 million jobs – which is around 4% of total employment. However, despite being an important contributor, the sector is facing major challenges for the future, namely gender equality in the workforce (whereas only 22% of women's work). Within the transport sector, aviation is also an important source of employment, as had directly generated 2 million jobs in EU (in 2016), where 18.8% were jobs in airlines [1,2,6].

Comparing with other transport modes (*e.g.* in land and nautical, the women account for 14% and 20%, respectively), the aviation sector has been more successful in terms of gender equality where *c.a.* 44% of the total workforce in air transport in Europe are women [1]. In addition, aviation is also recognised as the most attractive sector which is widely associated with exciting travel opportunities and a degree of glamour [2].

Despite these good rates in the aviation sector, there are very stereotypical gender divisions of labour, where customer service jobs are typically filled by females (*e.g.* cabin crew), while pilots, mechanics and maintenance staff, air control, and others, are largely male-dominated positions [1,3].

According to the International Society of Women Airline Pilots (ISWAP), at the moment, just around 5% of the world's commercial airline pilots are female [1,4]. When it concerns to piloting there exists a misconception that all pilots are forced onto long-haul trans-continental flights, pulling you away from home for weeks on end – and therefore making it impractical to both fly and raise a family. Some countries (*e.g.* India, Iceland, Finland, among others) are already showing signs of acting to counteract these estimates where 10 % of the pilots are female, and others (such as U.S., the Netherlands, Belgium, United Arab Emirates, Spain, etc.) which have more than 10% female student pilots attending classes. Singapore stands out these statistics, where around 23 % of the student pilots are women [5]. On the other hand, the bottom of the list is occupied by the Norwegian airlines with only 1% of female in the cockpit. When it regards to airport operational roles and ground handling in Europe, women make up 25.8% of employees, although in the lower age bracket (those under 30) over 32% of staff are women. In 2017, a sample survey of air navigation services providers was conducted revealing that 25% of air traffic controllers (globally) were women. In fact, in some

countries, gender parity in the operations room is no longer a real issue, as per example in France where the majority of the air traffic controllers are women. The main existing challenges are also related to the executive and governance level, with women making up just 3% of the top 100 airline chief executive officers (v. 12% of CEOs in the wider economy); 8% of chief financial officers (v. 19% of CFOs); and 3% of chief operating officers (v. 9% of COOs). Within human resources, airlines outperform the wider economy, with women constituting 32% of HR directors (v. 23%) [3, 5,6].

In the traditionally male-dominated aerospace world, some steps have to be taken to challenge stereotypes, ensuring that its workforce is as gender-balanced as possible, working to improve work conditions and reducing harassment. Gender diversity is considered to be vital to innovation and key to business performance and is proved that creates better business results and leverages societal evolution. Even though young women can be inspired to study STEM subjects, they'll need the determination to overcome lingering prejudices in the transport sector. For this reason, role models are also very important in attracting female talent at an early stage of career development, namely through, for example, mentoring activities [3].

EU Transport Commissioner Violeta Bulc accentuates the challenge ahead: “If we want our society to flourish, we need to engage all of its talents, all of its human resources, at all levels. By engaging women and men together, towards gender equality, we will make it happen”. Addressing the point that the aviation sector will require new skills, she also stated that “innovation and digitalization will mean new types of transport jobs and this is an opportunity for better gender balance”. To that end, in November 2017, SESAR Joint Undertaking along with a raft of Europe’s transport actors signed up to the EC’s Declaration on equal opportunities for women and men in the transport sector, in support of the Women in Transport Platform, and is raising visibility around its member’s activities. “Nowadays the importance of a good gender – the mix is undisputed, especially in safety-critical environments. Female characteristics such as intuition, cognitive abilities and team spirit build an important cornerstone for successful business” [3].

These and other activities seek to convert policies into tangible initiatives to eradicate glass ceilings (an unacknowledged barrier to advancement in a profession, especially affecting women and/or minorities); offer flexible working conditions whilst parents (of both sexes) juggle work and childcare; and for women returning to work after a career break – create a path to re-entry. However, before getting to those stages, it’s imperative to boost the influx of female talent into the sector, and that means inspiring young minds and fostering engagement with prospective employees in their formative years. Below, a few companies in this sector, among others, that have or are currently implementing initiatives to enhance female participation in the aerospace are presented [3]:

- Airbus: is striving to promote diversity by inviting female high school students to visit its facilities and meet its female employees to discuss their experiences via the *Elles du Futur* and similar initiatives. Also, women’s networks and mentoring programs at Airbus are actively promoting a more balanced leadership within the company;
- National Air Traffic Services (NATS): hosted a “Bring Your Daughter to Work Day”, where sixty 13 to 18-year-olds met with engineers. This initiative is part of NATS’ Early Careers recruitment scheme, aimed at motivating the next generation of female controllers, engineers and technicians by raising awareness of STEM (Science, Technology, Engineering & Mathematics) related career paths in aviation. The company has also provided a supportive and encouraging environment for women to pursue a fulfilling career whilst bringing up children;
- Thales: encourages internships and apprenticeships allowing the female candidate to gain hands-on experience. The company partnered, in 2011, with Elles Bougent, the association which provides networking opportunities for young women and promotes careers in science and technology. Under this partnership, over 150 Thales women were Elles Bougent mentors in 2018, acting as mentors and share their passion for engineering. Thales is also actively involved in the *Réseaux et Carrières au Féminin* forum, the *Journée des Sciences de l’Ingénieur au Féminin* event and various other initiatives promoting careers in science and technology to female pupils, students and graduates;
- ENAIRE: for the company, seeking the talent of women is embedded in corporate recruitment policy. The company has a “strategic plan, the Flight Plan 2020,” which “establishes various actions aimed at achieving equality between men and women via programmes that reconcile work and family life”. Also, ENAIRE has “women leading key areas of sustainability in their business, such as the environment, social action and contracting areas”;
- German Aerospace Center (DLR): the company believes that work-life balance is about providing flexible working methods and that “cutting – edge research requires excellent minds – particularly more females – at

all levels”. “Equal opportunities and a range of support measures for a better work-life balance have therefore long been the central pillars of DLR’s HR policy”. The company wants “to reach much fairer participation of women in the scientific-technical area in particular, also in leadership positions” – which it intends to achieve by setting “target quotas that should be reached in the next few years”. On a practical level, DLR provides “flexible work – time models, the possibilities of alternating teleworking and mobile working, consulting and intermediary services in matters of child support care and dependent relatives”. And when women have taken a break to raise children, it offers a “structured career re-entry process after a period of family-related absence.” DLR also joined the Women in Aerospace Europe (WIA – E) network in 2009, which encourages female employees to form networks, dedicated specifically to “the promotion of women to senior positions within the European aviation and aerospace industries”;

- Frequentis: as a family – owned company group, maintains “a special focus on work-life balance and the compatibility of family and career”, offering “a range of parental leave possibilities and childcare programmes”.

Additionally, academic institutions, such as the University of Bologna is actively promoting gender balance through a set of integrated actions such as a mentoring event, entitled Alma Orienta, which targets all components of the academic community, and where thousands of young students come to explore their learning options. The aim of the event “is to balance the attendance of female students in STEM areas” and “to stimulate young researchers to include the gender dimension in their project’s applications” [3].

In 2017, the European Commission (EC) also launched the platform *Women in Transport – EU Platform for Change*, with the aim to strengthen women’s employment and equal opportunities for women and men in the transport sector, thanks to the actions brought about by the Platform members. It will also serve as a forum to discuss and exchange ideas and good practices. The EC is actively encouraging aviation stakeholders to bring concrete actions to the Platform to improve employment and working conditions to attract and retain women in aircrew professions. The Platform gathers momentum, representatives from Europe’s aviation ecosystem to discuss the initiatives enabling a more equitable distribution of gender across the workforce [1,3].

Starting from the information provided above, the purpose of this article is to gather and present a review of a state of the art gender issues within the aerospace sector in order to better understand how best to attract and recruit such individuals to counteract the gender imbalance and improve their representation as one method of decreasing the aviation employers shortage. This analysis also aims to investigate the possible cultural, organisational, or other issues that perpetuate low representation of women in aviation, especially among pilots, engineering and leading positions. More specifically, this article intends to give a perspective of the factors that influence the attractiveness of the sector to increase the women participation focusing on three main pillars:

- The importance of generating interest in aerospace and building confidence among women;
- Changes in the educational context;
- Improvement of the employment context.

It should be further noted that the available research on women and minorities in aviation typically focuses on descriptive data or comparisons of different time periods as well as general gender differences. Few qualitative studies in this area currently exist, contrary to the calls for such research in exigent literature. Vermeulen and Mitchell (2007) stated the importance of qualitative research in gaining a better understanding of women’s sentiments on acceptance in aviation organizations [7,8]. Turney (2000) also recognized that qualitative inquiry to better understand ways to increase the recruitment and retention of women in aviation is needed. [9] Ison (2009) stated that more studies and research must be conducted to monitor trends in minority involvement as well as better understand how to best attract and retain such individuals [10]. Finally, Parker and Lynn (2002) argued that in order to gain an understanding of the complex issue of minority inclusion a qualitative approach and analysis are necessary [11].

2. Attracting women to the aerospace sector

2.1 Importance of generating interest in aerospace and building confidence

As already stated before, evidence suggests that women are underrepresented in some areas of work, notably those where some knowledge of STEM subjects is required. In Europe, only 30 % of women with STEM qualifications have jobs in a related area, and women make up just 15% of individuals working in STEM occupations [12]. According to some previous studies, the main reasons for this pattern include: (1) a lack of confidence, which can be exacerbated by

reduced prior knowledge related to engineering courses; (2) a lack of encouragement from friends, family and teachers, and (3) a lack of awareness of STEM as a growing career option [13].

Self-confidence is, in fact, viewed as one of the most motivational factors that influence the ability and attitudes towards science. Some recent studies have shown that young women's confidence to perform well some tasks in fields such as chemistry and mathematics is currently found to be lower than men [14,15,16]. Due to expectations of feeling less good in contexts with unfavourable gender stereotypes, women are found to be less likely to aspire to STEM careers [17]. In fact, girls and boys begin developing gender stereotypes, which then cause lasting effects in terms of percentage of women pursuing science and engineering pathways, which means that participation in STEM is traditionally associated with various stereotypically masculine identity traits and roles, enforced by the long-lasting historical and cultural idea that science is male-gendered [15]. The dominant association of science as masculine makes it particularly challenging for girls to see STEM as a potential career choice and, on the other hand, may equip boys with easily available and pre-established roles in science and technology [15]. The UK Government Equalities Office considers that "gendered stereotypes about what society regards as 'men's work' and 'women's work' are a strong influence on young people throughout their education, and can have a significant influence on the career choices they make" [18]. Regarding influences in childhood there are some traditional attitudes of family and friends that may also be influencing future career choices (e.g. 'girls play with dolls and boys play with cars'), thereby assuming that pre-conceptions about the roles of activities of men and women arise at an early stage [2].

In conclusion, positive STEM experiences and development of 'STEM identities' start from a very early age, with stereotypes being formed before the children enter formal education (e.g. in providing "caring" toys for girls and "exploring" toys for boys), through family relations (e.g. boys receiving more encouragement from parents to pursue STEM career choices), but also through other channels such as for example media impacts (e.g. gender stereotypes in television programs) [20]. Stereotypes can thus have both a direct and indirect impact on gender segregation, thus causing and recreating segregation in education namely in the choice of study fields or occupations that women and men take by driving interests towards specific subjects that are deemed appropriate. Similar associations could be made with fields and professions associated with caring and educating, which are traditionally deemed feminine. Women, in particular, feel more supported in environments which recognize the range of skills they have, provide opportunities for progression and take a firm line on sexist behaviour [21].

Also at an advanced stage, previous research on the recruitment and retention of women in STEM areas, namely in the aerospace sector, indicated that student success is also linked to feelings of connectedness and belonging [5]. With this context, Starobin and Laanan (2008) reported that, unfortunately, women student have been reporting a lack of social support in STEM fields [19]. Social support and the promotion of relationships among women is then viewed as an important part of confidence-building and a sense of belonging which provides the assurance she may need to pursue science.

Despite aviation and aerospace employers having a good reputation for encouraging young women to enter the industry, as already stated earlier, the number of women in technical roles such as engineering and flying remains low, therefore, careers information and supporting activities need to be more appealing and effective for girls too [22]. Some studies reported that women feel fearful of their ability to compete in and for example to complete flight training environs. This has been linked to a lack of confidence coupled with a perceived lack of mechanical ability. It is also common that women encounter a lack of acceptance by male flight instructors. Furthermore, it was also reported that cockpits typically are not ergonomically comfortable to many female trainees which further reduces confidence and may even make certain manoeuvres more difficult. The lack of female instructors also exacerbates anxieties and degradation of confidence which leads to a feeling of isolation and feelings of not being understood [23].

Within this, when it regards to lack of encouragement, one of the common issues identified is related to the lack of role models, mentors, and networks. For example, the absence of female role models, in particular, flight instructors tends to perpetuate the feeling of isolation that degrades the desire to continue in the selected career path. As noted by Settles *et al.* (2007), having mentors or role models empowers women, giving them positive reinforcement and guidance through the training and career progression processes. Women mentors can support in efforts to make the industry and job functions more transparent, giving entrants a realistic depiction of how the industry works and what it is really like in the work environment. Additionally, female mentors provide individuals entering aviation or those early in their careers with assistance dealing with issues affecting women that are not applicable to men, e.g. balancing the desire to have a family with professional aspirations. Apart from role models and mentors, the participation in conferences and forums have also been indicated as supportive as it provides a network of individuals with which to interact and garner support [2, 24].

An EC's DG MOVE study identified a number of highly effective promotional practices, transferable across the full spectrum of transport sectors in the EU Member States. These practices highlight the importance of tailoring efforts to specific opportunities targeted towards specific candidates and confirm that, in general, raising public awareness of issues, *e.g.* through an EU campaign, would not hit the spot, since it is unable to provide the level of tailoring and face-to-face engagement that is necessary to generate an increase in applications for transport jobs. Also, organizations such as "Women in Aviation" provide the much-needed support such as recruitment and job search opportunities, a magazine called "Aviation for Women", scholarship and internship opportunities, career support and services, job networking at conferences and chapter events [25].

2.2 Changes in the educational context

Gender separation caused by stereotyping in education creates gender inequalities in and beyond the labour market, acting as a barrier to increasing women's labour market participation. In fact, existing segregation in education is strongly coupled with segregation in the labour market and for that reason, in order to understand segregation in labour market a deep understanding of what influences the educational differences of girls and boys during their childhood and schools years is needed [12].

Past studies have been suggesting that gender segregation in STEM fields is highly resistant to change, taking as an explanation of the existing gender disparities in math performance. However, gender differences in average math achievement are now too small to explain the substantial portion of gender segregation in STEM fields or occupations [26,27]. Some of the differences in gender pay can be traced back to societal influences that children pick up from a very young age, and to the choices, they make at school and university. For instance, boys are much more inclined to study design and technology, and information technology, while many more girls than boys take modern languages and art and design. These differences are magnified in subjects taken at university and continue into employment. Overall, in the UK, almost as many girls and boys between ages 14 and 16 took STEM subjects in 2016, however three times more boys than girls took computing classes and 50% more boys than girls took design and technology, but with the number of girls awarded A* - C grades in this subject nearly 20% points higher than for boys [13].

At a higher level of education in the UK, in 2016, 40% more boys than girls between ages 16 and 18 took STEM subjects, including Computing, Economics, Mathematics and Information and Communications Technology (ICT). However, girls continued to outperform boys in every STEM subject. Even though more young women than men go to university, men are much more inclined to study technical subjects. The top two most popular university courses by subject area for women in the UK are education and subjects allied to medicine. In contrast, the most popular university courses for men in the UK are business and administrative studies and engineering and technology. With 57% of women studying in STEM courses, Portugal leads the list of OCDE countries with the largest number of women attending high education (and with career ambitions) in these areas. The percentage far exceeds the average of 39% among OECD countries. Not only, Portugal is being able to attract a growing number of women to highly employable courses that were once recognized as "typically male", moving to the much-desired gender parity, as it is at the top of the list, pushing for middle of the table countries like the United States, Germany or France [2].

The OECD's "Education at a Glance 2017" report already warned of this problem by noting that 31% of Portuguese adults aged 25 to 30 did not have the 10th grade completed. A percentage that is double the average of the OECD countries. In older generations, between 25 and 64 years, the percentage of those with no secondary education rises to 53%. In 2016 (data considered by OECD in the report), only 24% of the Portuguese adult population (between 25 and 64 years old) had higher education. The average of OECD countries was 37%.

Disaggregating the data, we noticed that only 15% of Portuguese university students attended integrated masters (with a minimum duration of five years).

Last year's "Education at a Glance" was already reporting national progress in the presence of women in STEM courses but noted that in the specific case of information technology inequality was all too obvious. The study supported the national increase in the number of graduates in the STEM areas with a higher percentage of graduates in Engineering since Information and Communication Technologies registered in the last year in Portugal one of the lowest rates of graduates among the OECD countries: 1%.

Although girls perform as well or better than boys in STEM subjects several external factors influence their choices in other directions.

Women tend to perform, at least, as well or better than men on average in university studies and have a relative percentage more proceed to research and academic career. The underrepresentation of women in academic positions may be a question of time due to the slow promotion in university positions, or an indication that university, after all, is not so gender equal, or a combination of both.

The implementation of interventions that could enable substantial and sustainable changes regarding the increase of women interest in the aerospace sector, improving, at the same time, the women's self-confidence in STEM subjects,

is needed. Changes in the educational context are a key aspect to tackle the gender stereotypes that women are exposed taking into account the use of appropriate role models, the influence of the peers, the recruitment and retainment of students, and the enhancement of classroom activities and contents (hands-on and project-based learning) [2]. As such, some of them are related to the increase of awareness of science and engineering education and career opportunities, influences in childhood, mentoring relationships, positive experiences in classes, among others.

Some measures have been adopted so far to minimize the existing differences, thus influencing girls' and women's participation, progression and achievement in STEM fields' education. Among others, some examples include: (1) making available on the internet and to primary school's children stories and cartoons where girls drive cars and fly aeroplanes as much as boys do and let them play with vehicle models or ask for them as presents; (2) develop a toolkit for primary and secondary school teachers to fight gender stereotypes and raise awareness about transport professions among young people include flight experiments equally accessible to boys and girls in the primary and secondary school programmes and activities; (3) identify good practices on how to organize rosters in the best family-friendly way, to be made available to all stakeholders; and (3) reinforce and accelerate visits to universities and industry, role models of success stories and the same fascinating technologies [7].

2.3 Improvement of the employment context

Gender stereotyping not only discourages women from choosing some of the STEM-related careers, but occupational segregation also has a detrimental influence on female pilots already employed. The need to encourage women to pursue some of the aerospace sector careers is particularly pressing as their numbers are significantly lower in STEM in general. As the traditional masculine beliefs and values have been rooted in the aviation industry for a long period, despite several efforts made, the percentage of women attracted to pursue a career in the field remains low, particularly in the technical side.

The aerospace sector seeks to attract and retain women for its future and growth, not only to face the gender imbalance but also due to the current global shortfall in the numbers of qualified employees that is imposing huge pressures on employers to recruit the greatest number of qualified employees (mainly pilots, mechanics and top managers that nowadays are still traditionally male-dominated areas). Thus, greater participation of women in aeronautics is not only an enlargement of the workforce in numbers, but it is also an enrichment in quality and talent, which are the foundations of inventiveness and competitiveness, on which depend the continuing European leadership in an ever more competitive world with new challenges. The combination of different talents in a cooperative and open-minded environment of equality also promotes the emergence of new ideas and allows pursuing them to active the best results in less time and with reduced effort.

According to the same EC's DG MOVE study, and based on a web-based survey done directed to young women and men (aged 16 – 25) across all Member States, the views of young people regarding the attractiveness of the transport sector and jobs within its various parts, appear to be both complex and confused, partially due to the fact that they are poorly informed about what the sector does, what types of jobs are available and what part they might play in it given their educational background. The same results suggested that, apparently, the majority of young people appear to be attracted to transport as an area of work, however, their most referenced groups are adults working as drivers of trucks or taxis or employed in the rail sector. In terms of the relative attractiveness of the different transport modes – air, road, rail, maritime – the study suggests that young people have an excessively positive view of air transport (due to the prospect of travel, good wages and the social aspect of the work and working hours) very limited knowledge of maritime (sea transport and inland waterways) and views on road (noisy/dirty based on motorway experiences) and rail (unattractive due to strikes and poor industrial relations) appear to be largely related to limited daily experience. In terms of emotional attachment, road and rail transport generally has a negative profile – especially for young women – even though these sectors are nevertheless seen to be stable areas of employment. On the contrary, the aviation sector and air transport generally have a positive profile, being seen to be prestigious and exciting. However, young people recognize that entry is unlikely to be easy. The main bright spot for potential employees is seen to be tourism shipping [1].

Additionally, according to the same study, approximately 70% of young women supported proposals to positive actions to make jobs equally attractive to young men and women, *e.g.* setting up promotional schemes, presenting successful examples of women taking up previously male-dominated positions, improving the working environment and making any necessary changes in education and training. Nevertheless, less than half that number of young men supported such actions. Thus, the research highlighted that organizations that take a proactive approach to address gender

imbalances in the workplace have identified the importance of ensuring that men engage in and understand the issues and become part of the solution [1].

The employment opportunities for women should offer the guarantees of equal treatment and protection of maternity and have strategies in place to support female career progression; openly recognize the contribution of female employees; and facilitate more flexible working for careers (both male and female). This can be done by raising awareness of career opportunities (recruitment and retainment); ensuring that the protection of the family, maternity and parenthood is effectively implemented; recognising and compensate eventual gender differences, and promoting equity and positive behaviour. This can be done by making all aspects of job recruitment, from the announcements to the interview, to the benefits, gender equal, and try to compensate for eventual gender differences. In addition, the recognition of job achievements should thus include a reasonable allowance for special circumstances and acknowledge the benefits of complementary. It also should be considered, not only the need to avoid direct and reverse discrimination or bias by judging and rewarding achievements in an even, transparent and fair way but the need of assigning positions and tasks using the best talents and skills available in both genders, thus promoting creativity and efficiency. In fact, women and men can have different sensibilities, distinct approaches to the same problem and complementary abilities that can be of benefit to the balanced and efficient performance of many tasks. Choosing which skills fit best each task is part of the efficient management of human resources in a company. Another aspect to consider refers to gender abuse, so taking this as seriously as gross incompetence or major financial misconduct regarding the consequences and leave no doubts on anyone's mind about this policy is recommended in order to discourage and prevent the continuation of abuse based on gender [2].

Additionally, it has been noted that support for women needs should also exist at the organizational level. Leadership should make efforts through the creation of a positive work environment where mentoring and networking has been also indicated to be helpful. Even if leadership simply connects corresponding individuals or even assigns mentors or role models to provide encouragement for female employees, these efforts can greatly improve job satisfaction and, as a result, retention. Human resource personnel should also be trained to be considerate of the recruitment and retention of minorities. Ideally, formal practices are put into place to create an inclusive work environment and recruitment process [23,24].

There is also concern about the existing gender pay gap. The gender pay has various causes and, therefore, no single measure will be sufficient to eradicate it. The gender pay gap is partly related to the fact that many women take time out from work for family reasons and may only take on a part-time job when they eventually return to work, which in general is paid less per hour than full – time work. Find a suitable balance between family and working life, combined with lower pay for part-time working contributes significantly to the pay gap. Also, the age of workers is also a cause of the gender pay gap, in the fact that it is wider between men and women at an older age. Part-time work is not equally spread between women and men; in the EU in 2017, 32% of women in employment worked part-time, compared with 9% of men. In practice, it is believed that solving the gender pay gap over the long term means tackling an ingrained difference in the skills that women gain and choose to develop during their academic studies and, therefore, in the jobs they go on to take. If more women are encouraged to study STEM subjects during their education and are taught in a way that recognizes their cognitive preferences, they are not only prepared for a more dynamic world of work but simultaneously the gap in pay starts to bridge [13].

Tackling the gender pay gap, and its root causes depend upon strengthening the engagement that already exists between businesses, educators and policymakers. In particular, businesses have to take a greater role in helping to reduce the engrained differences in the skills that women gain and develop. Our recommendations for businesses: (1) provide educators and policymakers with practical careers insight; (2) provide more support for women returning to work, and (3) publish detailed information on the gender pay gap [13].

European countries have been implementing initiatives to attain a more gender-balanced workforce such as the adjustment of working conditions, or schedules or responsibilities to account for special individual circumstances of women or other groups is not a favour. The recognition of professional achievements also must be objective and fair, using the same criteria applied in the same way, regardless of gender, age or belief. However, fairness also means equal opportunities, and while applying the same final criteria, all should have the same opportunities to attain those objectives.

3. Conclusions and Future Considerations

In conclusion, women are underrepresented in some areas of work, notably those where some knowledge of STEM subjects is required. More women typically work in jobs where the importance of soft skills is high but where technical skills are not as important, and on the other hand, men typically work in occupations where there is a more even blend of cognitive, social and technical skills. This clear divide in skills between genders needs to be addressed so that all students – whether male or female and at all stages of their education – are provided with an equal foundation upon which they can build the career of their choice. To do so, it is important to encourage more women in STEM fields and careers, to increase the diversity of ideas in the related workplaces, thus reducing the gender gap in these fields and encouraging teamwork among women and men.

This will require greater equality in the nature of the support provided to students, improved recognition that the way males and females are taught may need to be different, and greater encouragement and breadth of careers advice from schools and parents. Only then will women be able to make better – informed choices about the potential of their future careers.

In sum, some strategies and changes are presented below:

- By removing existing barriers and impediments: It is important to identify characteristics that are impeding the progress and remove both real and perceived barriers, thus making gender equality a reality in the field of aviation. This also includes examining potential mechanisms to improve work-life balance;
- By increasing visibility and outreach to younger girls through the existence of role models: Young girls did not consider or even imagine becoming a pilot because they rarely if ever, saw a woman piloting a plane. People need to have role models and to see people who look like them for it to occur to them to strive for a career in such an area;
- By providing support for women while they are students, trainees, and employees;
- By addressing retention in addition to recruitment: Further analysis is needed to perceive why women's numbers are dropping after training. While recruitment efforts can be improved by increasing awareness and role models, on the other hand, retention seems to be an issue that also needs to be addressed (e.g. difficult schedule and lifestyle);
- By providing more options and flexibility in scheduling and structure so that work has more work/life balance;
- By reinforcing leadership and organisational support: ensuring the existence of role models, including a mentoring system, as well as promoting diversity training which addresses attitudes, practices, and approaches to working with people who are different than yourself;
- And, by changing cultural perceptions: If a culture has been traditionally male-oriented, it will be difficult for diversity to take hold. Cultural attitudes need to change in order to open up more paths for the career development of previously underrepresented occupations.

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