

WOMEN IN SPACE STUDIES IN TURKEY:  
PROPOSITION OF SCIENCE AND TECHNOLOGY POLICIES TO ELIMINATE  
GENDER DISCRIMINATION

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PROPOSITION OF SCIENCE AND TECHNOLOGY POLICIES TO  
ELIMINATE GENDER DISCRIMINATION**

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## **ABSTRACT**

### **WOMEN IN SPACE STUDIES IN TURKEY: PROPOSITION OF SCIENCE AND TECHNOLOGY POLICIES TO ELIMINATE GENDER DISCRIMINATION**

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**M.S., The Department of Science and Technology Policy Studies**

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Main purposes of this thesis are to understand the contributions of women in aerospace studies in Turkey and see whether there exists any gender discrimination, gender-related challenges that women face with and gender disparities in aerospace field in Turkey. For that end, I identified the scholarly contribution of women to aerospace-related fields in Turkey in graduate theses and dissertations and TUBITAK-funded research projects by detailed literature research. I resort to qualitative research design. I used semi-structured interviews with 13 women and men from aerospace related fields. Moreover, I became a participant observer for in an aerospace project. As a result, I found that women are discriminated due to their gender in aerospace field in Turkey. There exists glass ceiling, hiring inequalities, payment inequalities, promotion inequalities, inequalities of behaviors towards women and men, struggles due to maternity leave, not being respected as same level as men, alienation from social activities, daily talks and business processes, and defined gendered expectations in aerospace field. To address that, new fiscal and public policies are recommended, such as decreasing tax wedges, providing incentives for hiring more women, family

benefits, providing incentives for childcare, defining target percentage of women for each institution, building gender-neutral institutions, redesigning gender sensitive working place, conducting activities to raise awareness about gender discrimination and how to solve it and so on.

**Keywords:** Gender Discrimination, Gender, Aerospace, Gender Equality, Policy

## ÖZ

### TÜRKİYE'DE UZAY ÇALIŞMALARINDA KADIN: CİNSİYET AYRIMCILIĞINI ORTADAN KALDIRMAYA YÖNELİK BİLİM VE TEKNOLOJİ POLİTİKALARI ÖNERİLERİ

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Bu tezin temel amacı, Türkiye'deki uzay araştırmalarına kadınların katkılarını anlamak ve Türkiye'de uzay alanında cinsiyet ayrımcılığı, kadınların karşılaştığı cinsiyete bağlı zorluklar ve cinsiyet eşitsizliği olup olmadığını görmektir. Bu amaçla, kadınların katkılarını anlamak amacıyla detaylı literatür araştırması ile lisansüstü tezler ile TÜBİTAK tarafından finanse edilen araştırma projelerinde kadınların Türkiye'deki uzay ile ilgili alanlara bilimsel katkısını belirledim. Çalışma kapsamında nitel araştırma tasarımı kullandım. Uzay ile ilgili alanlardan 13 kadın ve erkekle yarı yapılandırılmış görüşmeler yaptım. Ayrıca bir uzay projesinde katılımcı gözlemci oldum. Sonuç olarak, Türkiye'de uzay alanında kadınların cinsiyetlerinden dolayı ayrımcılığa uğradığını tespit ettim. Cam tavan, işe alım eşitsizlikleri, ücret eşitsizlikleri, terfi eşitsizlikleri, kadın ve erkeğe yönelik davranış eşitsizlikleri, doğum izni mücadeleleri, erkeklerle aynı düzeyde sayılmama, sosyal faaliyetlerden, günlük konuşmalardan ve iş süreçlerinden uzaklaşma ve tanımlanmış cinsiyete dayalı beklentiler gibi sorunların bu alanda var olan cinsiyet ayrımcılığı çeşitleri olduğu sonucuna vardım. Söz konusu cinsiyet ayrımcılığını ele almak ve olabildiğince önüne



geçmek için vergi takozlarını azaltmak, daha fazla kadın işe almak için teşvikler sağlamak, aile yardımları sağlamak, çocuk bakımı için teşvikler sağlamak, her kurum için kadın hedef yüzdesini belirlemek, cinsiyetten bağımsız kurumlar oluşturmak, cinsiyete duyarlı yeniden tasarlamak gibi işyeri, cinsiyet ayrımcılığı ve bunun nasıl çözüleceği konusunda farkındalık yaratmaya yönelik faaliyetler yürütmek vb. gibi yeni maliye ve kamu politikaları ile amaca yönelik etkinlikler önerdim.

**Anahtar Kelimeler:** Cinsiyet Ayrımcılığı, Cinsiyet, Uzay Çalışmaları, Cinsiyet Eşitliliği, Politika

*To my lovely husband for his endless support and love...*

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During this study, I had the chance to meet valuable people in aerospace field and they shared their sincere thoughts and experiences with me. Thank you for all your supports and time.

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## LIST OF ABBREVIATIONS

ARDEB	Research Support Programs Presidency
BS	Bachelor Degree
ÇAYDAG	Research Support Group for Environment, Atmosphere, Ground and Marine Sciences
CERN	Conseil Européen pour la Recherche Nucléaire
COST	European Cooperation in Science and Technology Program
EEEAG	Research Support Group for Electric, Electronic and Informatics
Int_ID	Interviewee's Identity Number
KBAG	Research Support Group for Chemistry and Biology
MAG	Research Support Group for Engineering
MFAG	Research Support Group for Mathematics and Physics
MİSAG	Research Support Group for Machinery, Chemical Technologies, Materials and Manufacturing Systems
MS	Master Degree
NASA	National Aeronautics and Space Administration
R&D	Research And Development
RİOT	Research and Innovation Outlook Turkey
SBAG	Research Support Group for Health Sciences
SOBAG	Research Support Group for Social Sciences and Humanities
STEM	Science, Technology, Engineering, And Mathematics
TBAG	Research Support Group for Fundamental Sciences
TUBITAK	Scientific And Technological Research Council of Turkey
TÜİK	Turkish Statistical Institute
YDABÇAG	Earth, Marine, Atmospheric Sciences and Environment Research Group
YÖK	The Council of Higher Education

## **CHAPTER 1**

### **INTRODUCTION**

It can be acknowledged that the most universal and most ancient inequality factor is gender (Harding, 1986). Gender difference, as a symbol system, is the most ancient, most universal. It is a symbol system because it is diffused in our language's logic. Language determines the way we define social structures. Feminists criticize this symbol system because it values men more than women. It creates a division of labor in which men have more opportunities, more life chances than women.

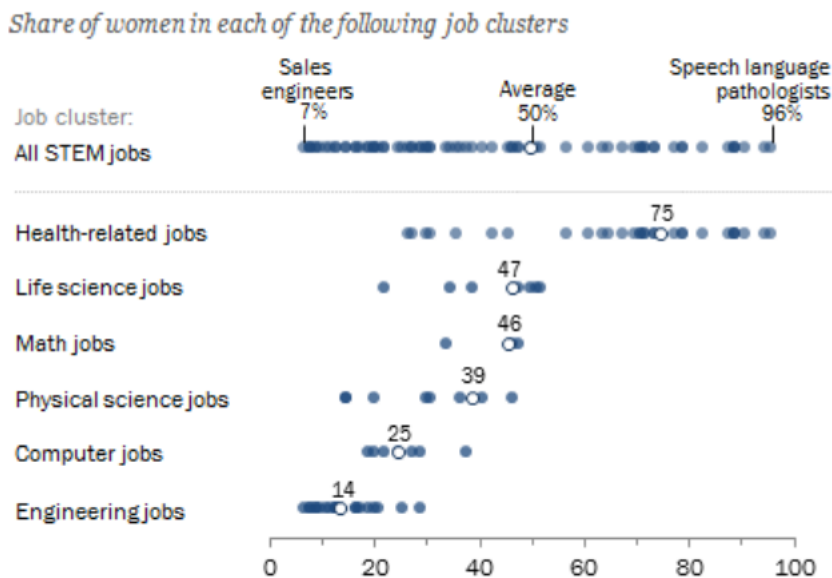
Gender and technology shape each other constantly. It is not an exaggeration to say that technology and innovation improvements enhance gender inequality and increase social norms. Therefore, it can be said that as technology improves, the gender stereotypes and gendered mindset increase. As Hughie Mackay and Gareth Gillespie (1992) espoused that those technological improvements shape the society and affect the social change. It is identified that men have the monopoly of technology in terms of creating, controlling, and using it and, it is a significant source of their power (Wajcman, 1991). That's why there is an ongoing acceptance that the field of science and technology is suitable for men. The field of science, technology, engineering, and mathematics (STEM) has become male dominated since there exist a discrimination against women since it is believed that this is not a women's place to be (Silva, 2019). During the survey conducted by the Center in 2017, in STEM jobs, most women indicate that they experienced gender discrimination at working place and, from the Figure 1, it can be seen that women face with gender discrimination, gender-related challenges that prevent them succeed and sexual harassments more than men (Funk & Parker, 2018).



**Figure 1:** Women and Men in STEM Field at Odds Over Workplace Equity

It can be seen from Figure 1 that half of the women joined in the study experienced gender discrimination at work (Funk & Parker, 2018). These discriminations are mostly about hiring, firing, promoting, salary, exclusion and respect ("Gender Discrimination in the Workplace | Bohm Law Group Employment Lawyers", n.d.).

Although it is believed that STEM is not a field for women (Silva, 2019), there are women in this field. However, among the different jobs in STEM field, it can be seen from Figure 2 that women rate in some fields are more than others (Funk & Parker, 2018).



**Figure 2:** Representation of women in STEM jobs

When it is about health care, caring for others, soft skills and less machines, women rate in these kind of fields increases. On the contrary, in engineering field, the rate of women is fewest among STEM jobs. Then, computer jobs

follow it and has the second fewer women rate. It is acknowledged that engineering field is not accepted as women's place and there exists gendered structure in this field (Pehlivanlı Kadayıfçı, 2015).

Nowadays, one of the most popular engineering fields of STEM is Aerospace. In this study, I am using aerospace studies as an umbrella term that covers both the basic science, applied science, and engineering jobs. Aerospace studies has been attracting so many people's attention (Coykendall et al., 2021). Mystery of what is out there and what can be useful for humanity make people want to be a part of it and gain more knowledge by focusing on aerospace studies more ("NASA: 60 Years & Counting - Mysteries of the Universe", n.d.). Actually, it started with B.C 4000 with the usage of shadow clock in Egypt. The studies accelerated with the Copernicus's Theory on Solay System and increasingly continue worldwide ("Tarihçe", n.d.). There are scientists that focused on aerospace throughout their lives such as Galileo Galilei, Johannes Kepler, Isaac Newton, Max Planck, Albert Einstein, Carl Sagan and Stephen Hawking ("Astronomiye yön veren bilim adamları", 2018). Nowadays, NASA, CERN, SpaceX, ESA are well-known and famous space-focused institutions with an enormous effort to achieve biggest successes. There are lots of people who joined these studies and dedicated their lives to this field. The chronology of all these studies is available on the internet with various articles, news and sites open to public. From all these resources, it can be seen that it is really male-dominated area.

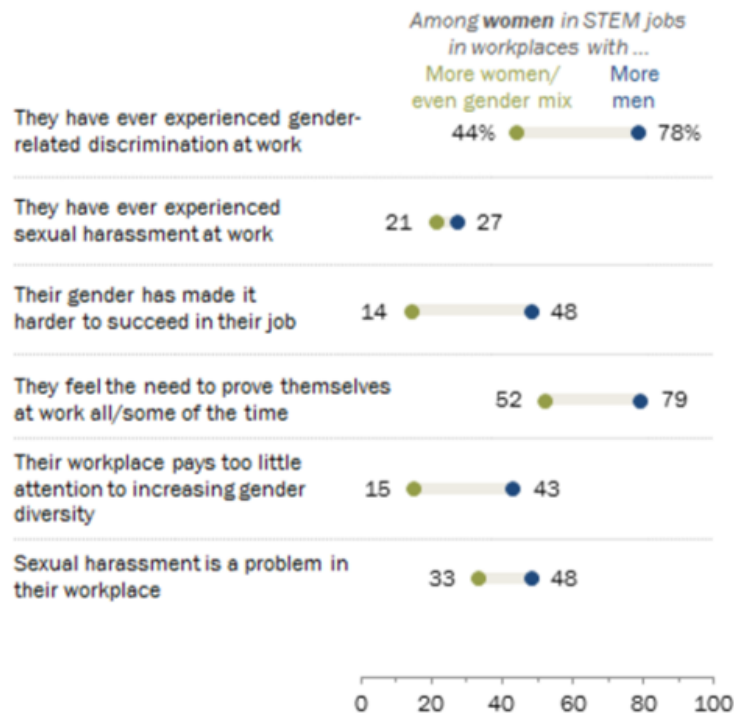
In terms of women contribution and participation in aerospace studies, there are available information and chronology if one woman goes to the space or moon as an astronaut, commander, scientist or visitor. In terms of over-land studies and any other contributions of women apart from going to the space are not clear as far as I searched. That made me think that the endeavors of women are ignored and not focused on enough to give information about them in the literature. All the information I encountered were mostly about men rather than women in this field. After realizing this, I especially did research on women in this field. History of women who joined aerospace studies and their challenges

due to gender-based discrimination are accessible via internet ("Women in Male-Dominated Industries and Occupations", 2021) ("Pioneering women in space: A gallery of astronaut firsts", 2021), articles (Ryan, 2020) (Robinson & McIlwee, 1989), and books (Topacio Long, 2017) for different countries. However, during the research, I did not come up any study or research about women in aerospace studies in Turkey. I found gender studies and researches focus on gendered structure and gender discrimination in various fields in Turkey such as different types of engineering fields (Pehlivanlı Kadayıfçı, 2015), medical products and health sector (Genç Kuzuca & Arda, 2010), IT sectors (Alhroob, 2019), property acquisition (Uzun & Colak, 2010) and so on. However, I did not find a study on gender discrimination or women's history, participations in aerospace field which is very hot topic nowadays and for me, it is very interesting field to wonder, search, and learn.

I wanted to learn more about women's part and struggles due to the gender discrimination in aerospace field and to come up with solutions to eliminate these gender-related problems. Due to the research opportunities, I wanted to focus on Turkey's aerospace studies since there exists patriarchy in Turkey and it is very likely to face gender discrimination in every part of daily life and working life (Dönmez & Özmen, 2013). There is a hegemony of men in the public sphere and traditionally women are expected to stay at home to take care of domestic responsibilities. Outside their homes, women are not always welcomed in work places and public spheres. I aimed to find out that whether it is the same for aerospace field. Moreover, it is known that STEM field has been improving since 2009 in Turkey (Beşpınar & Pehlivanlı Kadayıfçı, 2021). These improvements were for increasing labor force without having gender sensitivity. That is why gender discrimination and gender-related challenges become more and more due to not creating gender sensitivity from the beginning (Beşpınar & Pehlivanlı Kadayıfçı, 2021).

To that extent, for Turkey, I always found studies about technologies, developments and plans in aerospace studies. However, I acknowledge that aerospace field is male-dominated, I expect that there exist gender-related issues

in this field since it is provided that women face more gender-related discrimination in male-dominated work places than women-dominated places or places with equal number of women and men (Funk & Parker, 2018). In Figure 3, it can be seen that women face more gender-related disparities and challenges in male-dominated workplaces.



**Figure 3:** Difference between Male-Dominated and Women-Dominated Workplaces in terms of Gender Discrimination

Even if there are not so many information, I believe that there must be very important roles of women in aerospace studies in Turkey. That is why I aim to find out that the contribution of women in aerospace field in Turkey by doing further researches and see whether this field is male-dominated in Turkey too. Then, I focus on whether there exists gender discrimination in this field or not. Since it is assumed as male-dominated field and there is not enough information about women in this field in literature of Turkey, I am in the opinion of there exists gender disparities and gender-related challenges that makes it harder to women to join and continue their studies in aerospace field. After finding out gender discrimination existence in aerospace field in Turkey, I aim to provide

recommendations and possible science and technology policies to eliminate gender-related disparities and struggles in aerospace studies in Turkey. To achieve these aims, I asked the following research question: “What can be done to eliminate gender discrimination in aerospace studies in Turkey if it exists?”.

### **1.1 Organization of the Thesis**

In Chapter 2 of this thesis, I provided general information about gender discrimination in STEM field. Moreover, I provided detailed information and data on gender and aerospace studies worldwide. Then, I focused on Turkey in terms of gendered structure, performed aerospace studies and women’s contributions.

In Chapter 3, I explained methodology of this thesis by providing reasonings of selected methodology, sources of data, data gathering process and analyzing process to answer the question that whether there exist gender-related challenges in aerospace studies or not.

In Chapter 4, I discussed the findings of both qualitative and quantitative results from two different points of view. First, I emphasized on aerospace-related contributions of women in terms of participations in education, contributions to literature and running R&D projects. Secondly, I emphasized on gender-disparity in aerospace field by focusing on experiences of women so far. I classified gender-related disparities by focusing on people who discriminate, where discriminations take place or types of experiences and feelings of women faced with.

In Chapter 5, I provided concluding remarks by re-emphasizing on results I discussed in Chapter 4 and limitations of this study. In this case, I mentioned about future study topics.

In Chapter 6, I concluded my thesis by providing science and technology policy recommendations and further solutions to eliminate gender discrimination and achieve gender equality in aerospace field in Turkey.



## 1.2 Importance of the Thesis

In the literature of aerospace field, the information from different countries about history of women participation in aerospace studies such as missions, flights and projects in space ("Feminine face of space", 2014) and the information about differences that men and women face in space based on sex differences are available (Mark et al., 2014). However, as far as I researched, I think that there are not so many publications focus on women's contributions in over-land studies, their importance and faced gender-based challenges in this field. For Turkey, in aerospace field, I did not come up to any provided publication about women's participations, importance, contributions in literature, their achieved success and gender-based challenges they faced. This study makes a great contribution to existing literature in six aspects.

- ❖ It is one of the first studies that brings women's contribution in aerospace studies in terms of contribution to literature, completing R&D projects and having great achievements as academicians.
- ❖ It is one of the first studies focusing on gender issues in aerospace studies in Turkey by focusing on women's experiences in this field.
- ❖ It increases the awareness of people about women's struggles due to gender discrimination and provide in-depth understanding that this problem exists beyond our world limit.
- ❖ This study provides possible science and technology policies different suggestions about what can be done in order to eliminate gender-related problems that women's face in aerospace studies in Turkey and what can be further focus points.
- ❖ It provides several recommendations for encouraging programs and initiations to prevent gender discrimination and increase the number of women in space studies.
- ❖ I believe that developments will continue to happen in aerospace field in Turkey. To be able to do that, we should eliminate problems that prevent us from improving. I believe one of the biggest problems in this field, in Turkey too, is gender discrimination against women. We need

every people's endeavor, passion and knowledge. We do not need discrimination. That is why I strongly believe that working together without any disparities will increase our success. I aim to spread this idea and hopefully create solutions on these problems. In this respect, this study raises awareness about gender-related disparities have a negative impact on the speed of aerospace studies in Turkey.

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Gender Discrimination and STEM

In STEM, gender gap persists across all around the world ("Women in Science, Technology, Engineering, and Mathematics (STEM) (Quick Take)", 2020). Women constitute nearly 28% of the workforce in STEM ("The STEM Gap: Women and Girls in Science, Technology, Engineering and Mathematics", n.d.). Since it is a male dominated field and, both the workplaces and educational fields are indeed male-dominated, women who started their education and careers in STEM face with huge discrimination such as income disparities, prevented from making progress in their career, feeling under pressure to prove themselves and so on (Funk & Parker, 2018).

Moreover, it is clear that, in various work places in STEM field, women's contribution or potential are ignored to a large extent (Sherbin, 2018). Research indicates that female engineers are hired for positions which require low level of technical knowledge and given less valued roles, even well-meaning mentors do this (Frank, 2019).

Furthermore, isolation is a different way of gender discrimination in male-dominated fields. Men isolate women in terms of business processes, social activities, professional improvement educations and during any other work-related processes. Being passed over for significant job assignments is a way of gender discrimination as well. In addition to being isolated by men, due to low number of women in this field, women face with a challenge that is not being

able to access women who can be co-workers, peers, mentors or role models for them (Madgavkar et al., 2019). This results in facing a discrimination due to lack of mentoring and career development opportunities (Campuzano, 2019).

The other way of discrimination is that they are paid less than their male co-workers (Funk & Parker, 2018). It is given that, annual salaries for men in STEM is nearly \$15,000 higher than women. Women who graduated from STEM field are hired with lower income than men, even if they have higher success rate and score than them ("The STEM Gap: Women and Girls in Science, Technology, Engineering and Mathematics", n.d.). In 2019, women earned 82% of men's weekly earnings (U.S. Bureau of Labor Statistics, 2021). It is mentioned in a study that, in male-dominated places, one of three women indicate that they earn less salary than men even they are doing the same job (Parker, 2018).

People mostly hold negative thoughts of women in "masculine" positions, like engineers or scientists. People decree women to be less skillful than men in "male" jobs if they are not frankly successful in their work. On the other hand, if one woman is clearly skillful in a "masculine" job, people consider her as less likable. Due to this fact, women in STEM found themselves in a double bind (Hill et al., 2010). That brings higher stress and anxiety when it is compared with working in other fields (Qian & Fan, 2018). In order to gain men's respects and be respected by co-workers, 25% of women in male-dominated workplaces mention that they always feel the necessity of proving themselves at work. However, in female-dominated workplaces, 13% of women feel the same pressure (Parker, 2018).

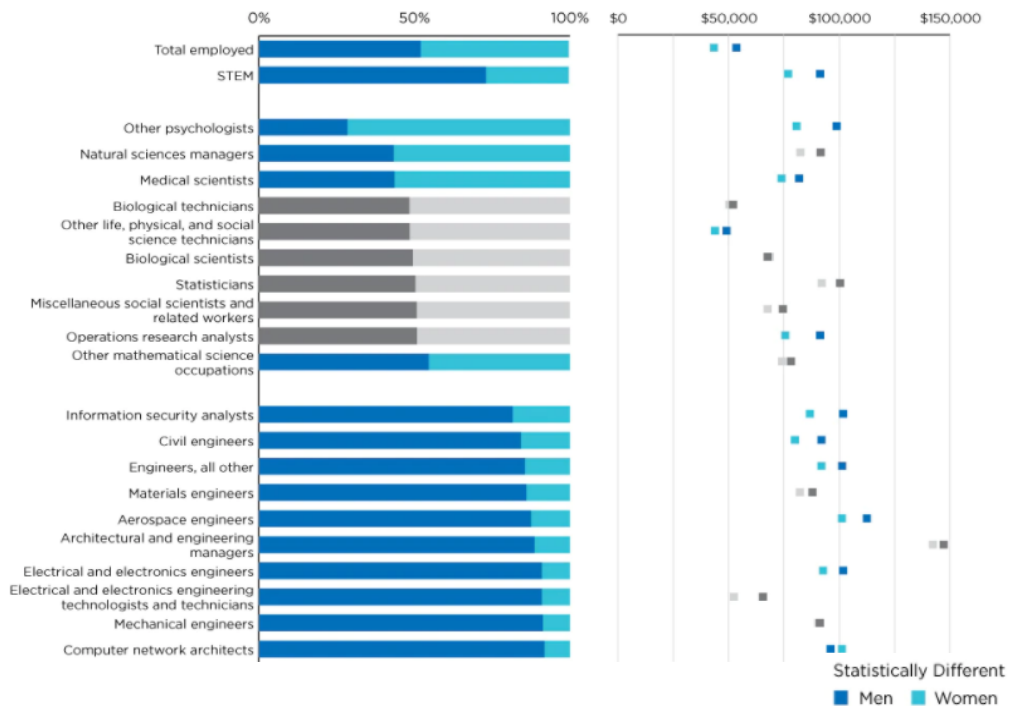
One of the gender discriminations is sexual harassment ("Women in Male-Dominated Industries and Occupations", 2021). Several reports have shown that, sexual harassment is more overborne in male-dominated work places and also, in these places, women are 27 times more likely to report sexual harassment than men ("Gender Matters: Women Disproportionately Report Sexual Harassment in Male-Dominated Industries", 2018). Moreover, sexual harassment is not only a problem in workplaces, it is also a huge problem that

women encountered during their educational lives. It is shown as a result of a study that women who are in male-dominated university majors experience higher level of sexual harassment than women in gender equivalent or female-dominated majors (Dresden et al., 2018).

In order to overcome these gender discriminations and cope with people who discriminate, women generally distance themselves from co-workers, accept masculine behaviors and norms and leaving their job in STEM field (Sarathchandra et al., 2018). Women leave their STEM careers and jobs more than men ("When You Work in a Male-Dominated Industry", 2019).

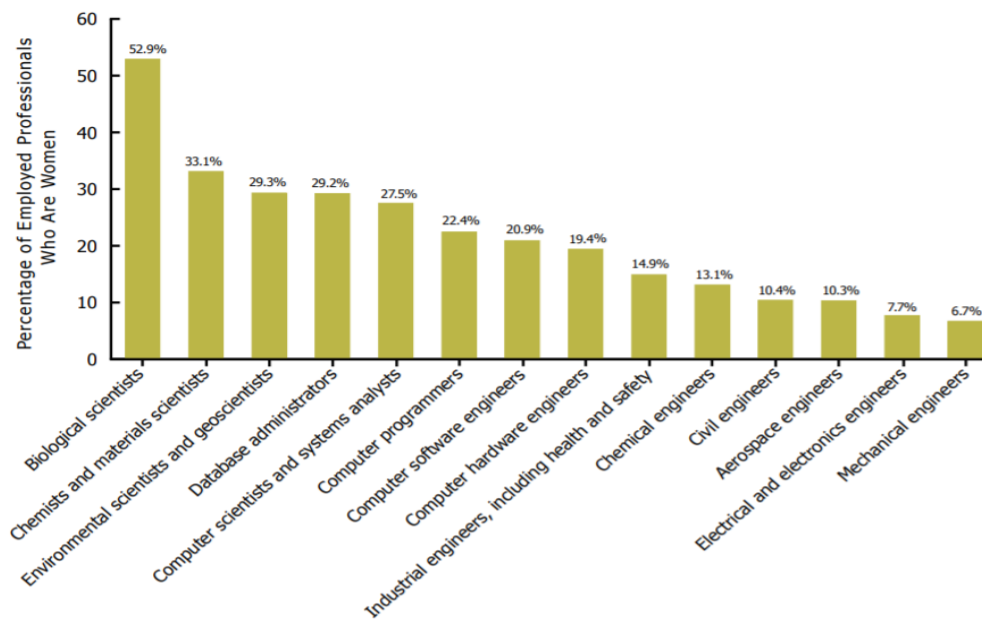
## 2.2 Gender and Aerospace Studies

According to Census Bureau's report in 2019, it is given that the participation rates of women and men differ in STEM occupations. In this case, it can be seen in Figure 4 that the participation rate of women is significantly low, especially in aerospace field (Bureau, 2021). As a one of the STEM field, aerospace field is accepted as male-dominated during the years and there exist a gender discrimination in aerospace field.



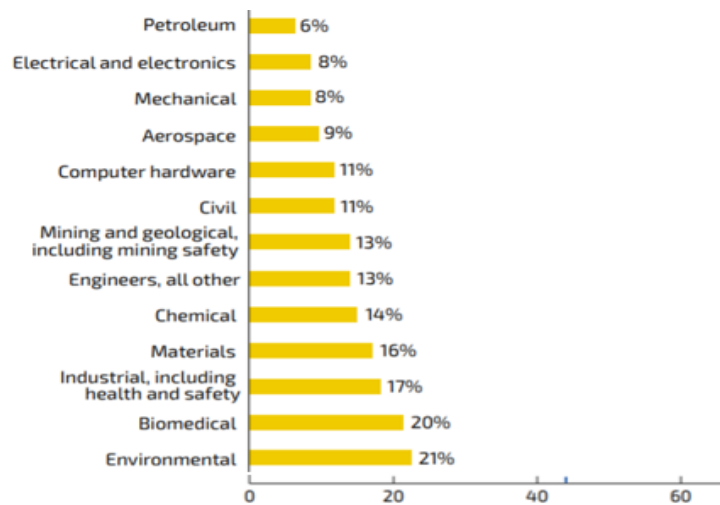
**Figure 4:** Distribution and Median Earnings by Sex of Full-Time, Year-Round Workers in Select STEM Occupations: 2019

For especially aerospace field, the level of women’s participation as aerospace engineers has been changing from time to time. Nevertheless, it seems always less than men. In 2008, 10.3% of employed women professionals were aerospace engineers as it can be seen in detailed way in Figure 5 (Hill et al., 2010).



**Figure 5:** Women in Selected STEM Occupations, 2008

In 2014, the percentage of employed women professionals who are aerospace engineers decreased to 9% as it can be in Figure 6 (Corbett & Hill, 2015).



**Figure 6:** Percentage of full-time professionals who are women, 2013

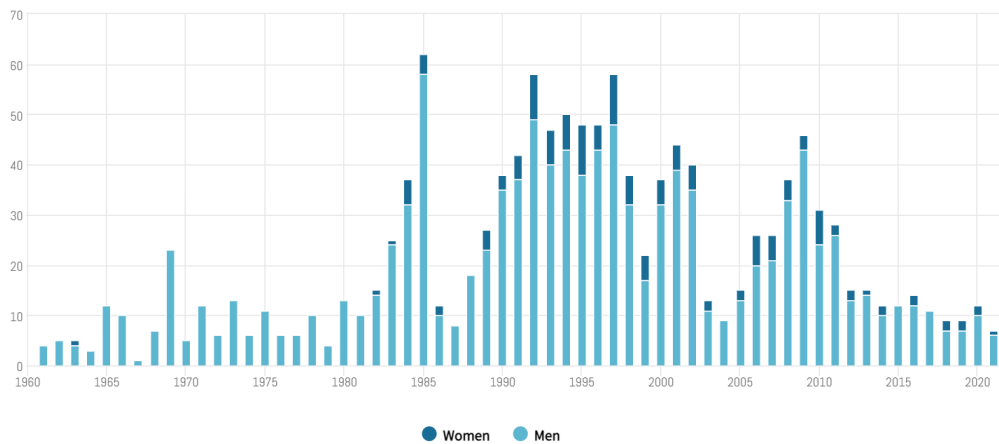
Male dominated businesses and occupations are especially defenseless to strengthening harmful stereotypes and making unfavorable situations that make it indeed more difficult for women to exceed expectations. It is still well-known that aerospace field has been male-dominated and it is indicated that only 18% of aerospace engineers are female (Ryan, 2020).

As Robinson and McIlwee indicated in their study that many of the interviewees of their study complained about sexist behaviors of men in aerospace field (Robinson & McIlwee, 1989).

Furthermore, women are not represented in senior leadership positions in aerospace industry adequately since there exist a glass ceiling as Catalyst indicates that, in the top ranked aerospace industries, there is not any senior leadership positions for women ("Women in Male-Dominated Industries and Occupations", 2021). Historically, male-dominated jobs created by men in an accordance way with masculine characteristics valued by men. Men are assumed as unemotional, intelligent, fair and good interaction ability with subordinates and seen as a good manager. This creates disadvantaged situation for women in terms of lack of having masculine strengths and characteristics (Somers, 1957).

In February of 1960, the American magazine Look ran a headline story that asked, "Should a Girl Be First in Space?" It was a sensational title at the time, signaling a daring notion. And, as we all know, the proposition was unsuccessful. NASA launched Alan Shepard into space in 1961, followed by numerous of other astronauts during the next two decades. Imagining women as a first choice has different reasons. For one thing, there are medical research. Female bodies, according to certain research conducted in the 1950s and 1960s, had stronger hearts and could better endure vibrations and radiation exposure. Women, according to psychological studies, coped better than men. Furthermore, psychological studies have shown that women coped better than men in situations where they were isolated and deprived of sensorial inputs. However, there was another, more compelling reason why women would outperform males as astronaut candidates: economics. Women are, on average,

less expensive to launch and fly than men due to their size. When planning a mission, an astronaut's calorie requirements are extremely important. The more food required to keep a person's weight stable over a long space flight, the more food should be launched with her. The payload becomes heavier as more food is launched. The more fuel required to launch a payload into orbit and beyond, the heavier it is. The heavier the rocket becomes as more fuel is required (Greene, 2014). In total, there are 506 male astronauts and 64 female astronauts launched until today. The total flight number of male astronauts is 1148 while female astronauts' total flight number is 146 (Roberts, 2021). The difference of number of women and men who have been participated in space studies as astronauts can be seen in Figure 7 (Roberts, 2021).



**Figure 6:** Distribution of Female and Male Astronauts Launched per Year

In 1963, Valentina Tereshkova was the first women in space, a Soviet Cosmonaut. Svetlana Savitskaya was the first spacewalker in 1982, 19 years after Valentina. Sally Ride became America's first female astronaut who is U.S. women in space when she launched in 1983 after Valentina Tereshkova and Soviet cosmonaut Svetlana Savitskaya. Sally Ride faced with gender discrimination and the press questioned her about her reproductive organs and whether she would cry if something went wrong on the job (Ryan, 1983). In 1984, NASA Astronaut Kathy Sullivan was the first American women who performed a spacewalk. In 1991, Helen Sharman was the first British person in space. In 1992, Roberta Bondar was the first Canadian female astronaut. In



1994, Chiaki Mukai was the first Chinese women in space. In 1996, first French women in space was Claudie Haignere and, in 2001, she became the first European women visited the ISS. In 1999, Eileen Collins was the first space shuttle commander. Peggy Whitson was the first commander of space station in 2008 during Expedition 16. In 2008, Yi So-Yeon was the first South Korean astronaut who complete space travel. In 2019, first all-female spacewalk was achieved by Christina Koch and Jessica Meir ("Pioneering women in space: A gallery of astronaut firsts", 2021). Before starting to space task, there women who have children have also been asked if they would compare to traditional defined gendered expectations of motherhood ("NASA - Astronaut Mom Karen Nyberg Prepares for Mission and Motherhood 255 Miles Up", 2013).

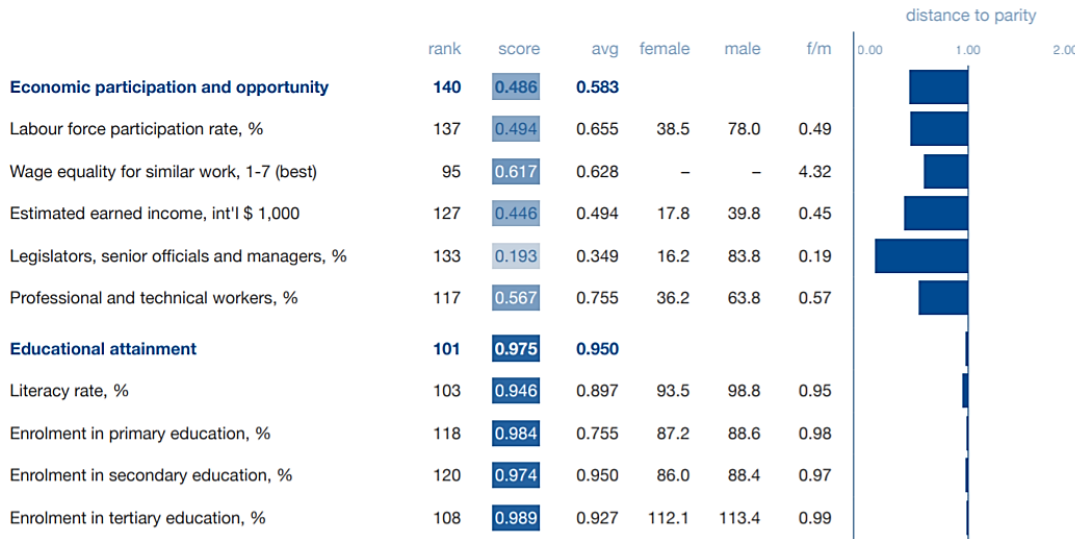
Moreover, spacesuits are also another gender issues in space studies. In the 1960s, spacesuits of NASA were only custom made for individuals, they were all men. In the 1970s, NASA tried to altered to spacesuits in a way that they could be used for multiple astronauts and they assumed as women can fit the smallest size of men' spacesuits. However, it did not work. Anne McClain could not fulfill her duties due to not appropriate torso size. In 2020, NASA started to change the design of the spacesuits by leaving the assumption that men as bigger women or women as small men, accepting all body types are different (Botkin-Kowacki, 2020).

### **2.3 Gendered Structure in Turkey**

According to The Global Gender Gap Index 2021 rankings, Turkey is ranked at the 133 out of 156 countries. In terms economic participation and opportunity, Turkey is ranked at the 140 out of 156 countries and in terms of educational attainment, the rank is 101. Moreover, according to The Global Gender Gap Index 2021 rankings by region, Turkey is ranked at the 7 out of 19 countries of Middle East and North Africa region (World Economic Forum, 2021). Detailed information about Turkey's scores from Global Gender Gap Report 2021 of World Economic Forum can be seen in Figure 8 and Figure 9 (World Economic Forum, 2021).

Global Gender Gap Index	2006 score		2021 score	
	rank	score	rank	score
Economic participation and opportunity	106	0.434	140	0.486
Educational attainment	92	0.885	101	0.975
Health and survival	85	0.969	105	0.967
Political empowerment	96	0.052	114	0.123

**Figure 7:** Global Gender Gap Index of Turkey, Global Gender Gap Report 2021 of WEF

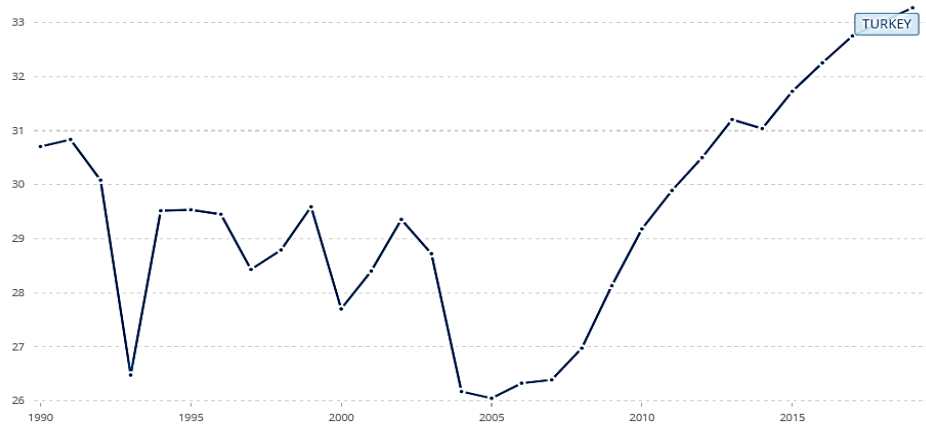


**Figure 8:** Country Score Card of Turkey, Global Gender Gap Report 2021 of WEF

There are gender stereotypes in Turkish society and every person is expected to act accordingly with their defined gender roles. Even if someone does not want to change their actions or the outside looking, they are still worried about what others think about them. Hence, we perform like our defined roles. If one is not portraying the correct gender roles, she/he knows that there are people who are looking at and judging. Even there is no one looking at her or him, the constant possibility of being judged due to not performing defined gender roles makes the person uncomfortable since the gender roles and society's pressure are internalized. This is also makes it possible to not feeling safe since there is a possibility to being rejected, assaulted and so on. I believe this can be also valid not only for public places, but also in home.

In Turkey, among the society, the feeling of there is someone constantly watching and judging us is real. Wright says that “Panoptic mechanism abducting the idea of masculine power as dominant over femininity and fixing it into society so subtly that people rarely notice or have the ability to protest it” (Wright, 2018). We can say that men, men power, and the fact of masculinity are at the center of the system as the controlling tower in the panopticon and women are placed at the edges of the circle of the system in a similar way with the cells in the panopticon. Women know that men are watching, controlling and have the power over themselves. “A woman must continually watch herself” belief is also valid for women too. Foucault believes that panopticon system creates strong patriarchy in which women are also subject to themselves. However, if one woman does not think like this and refuse to men control and men surveillance over her, she is seen as a threat and criminal who put the patriarchal system in danger.

Furthermore, the society is shaped accordingly with gender differences and it is assumed by male-dominated society that home is women’s place (Wajcman, 1991). That is the real place where women are responsible for running all the necessary task and households, fulfilling the needs of their husband and children, having a child and become a mother which is also accepted as main goal of one woman (Kagnıcıoğlu, 2017). That is why, in Turkey, majority of the society believe that workplaces are not assumed as right places for women. For this majority, it is seen as normal that father, brother or husband have the right to prevent one woman to work. According to July 2019 data that is released by Turkish Statistical Institute (TÜİK), labour participation rate of women is 34.5% while labour participation rate for men is 71.8%. In 2021, 38.5% of women participate in labor force which means that gender gap is 50% (World Economic Forum, 2021). In this respect, the yearly change in women’s participation in labor force can be seen in Figure 10 (“Labor force, female (% of total labor force) - Turkey | Data”, 2021).



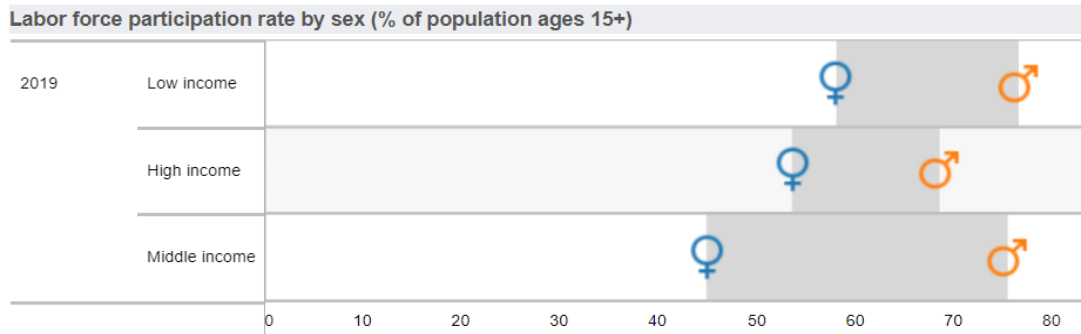
**Figure 9:** Labor force, female (% of total labor force) – Turkey between 1990-2019

According to Figure 11, this can be said that for the last 10 years, the participation level of women has been increasing, however, it is still so low (World Economic Forum, 2021).



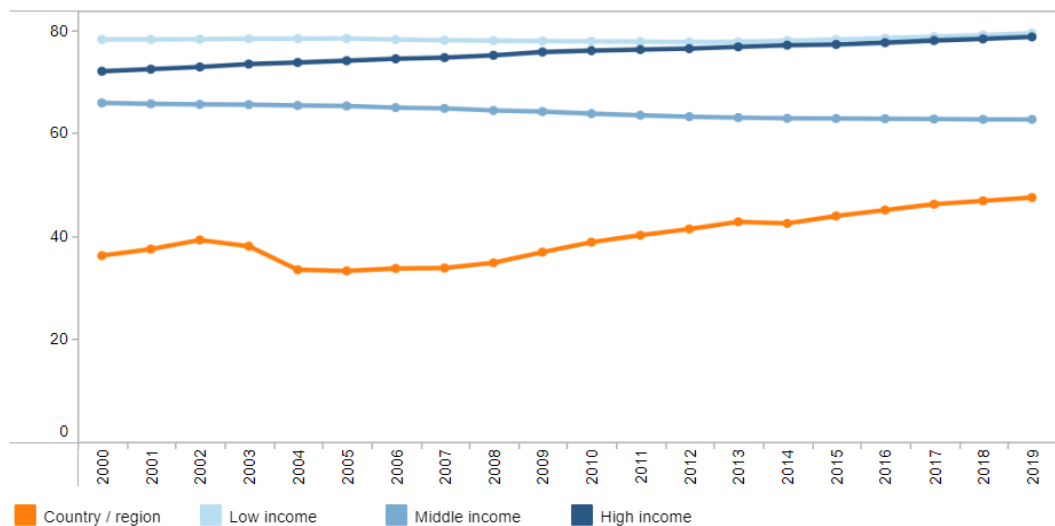
**Figure 10:** Change in labour force participation, 2019–2020, by gender, selected economies

Moreover, the inequalities of incomes are also another way of gender discrimination in Turkey. According to World Bank, women’s labor force participation rate with low income is more than the participation rate with higher incomes. Detailed information can be seen in Figure 12 ("Gender Data Portal: Turkey", n.d.).



**Figure 11:** Labor force participation rate by sex (% of population ages 15+)

Moreover, according to Worldbank data, detailed information about yearly change of the ratio of female to male labor force participation rate for Turkey can be seen in Figure 13 ("Gender Data Portal: Turkey", n.d.).



**Figure 12:** Ratio of female to male labor force participation rate (%)

Furthermore, in terms of expectations from women due to gender stereotypes, there are some job fields that are accepted as suitable ones for women. Being a teacher, nurse, doctor or being in soft-skilled job field are seen as the most reasonable job fields for women. It can be acknowledged that these suitable jobs are care-related or low paid ones. They consist caring, fulfilling the needs for other people, raising kids and teaching them and so on. Moreover, their working hours are defined and this makes it more suitable since women also allocate their time on household duties. Since these fields are the ones with female-

dominated, women face with less negative attitudes or rejections. In this case, it is clear that the number of women in STEM is very low since STEM field is considered as more appropriate for men. Because of the fewer women rate in STEM, these fields tend to maintain male-dominant culture, stay inflexible and discriminatory ("The STEM Gap: Women and Girls in Science, Technology, Engineering and Mathematics", n.d.).

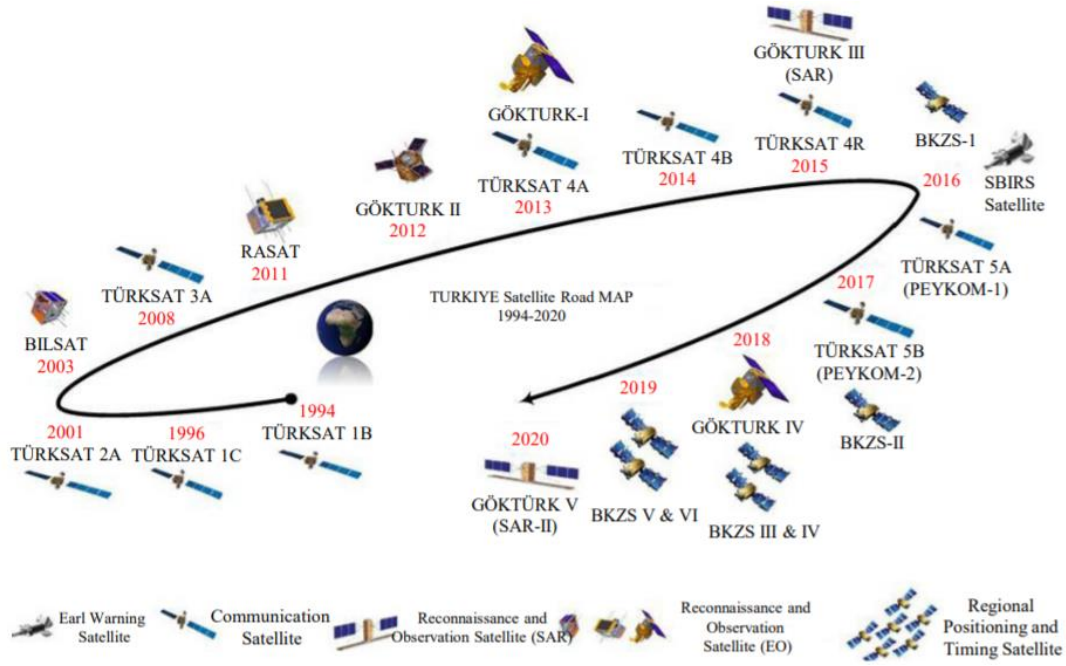
#### **2.4 Space Studies in Turkey and The History of Women**

In Turkey, space science and technology gained currency in the 1990s. Starting point of coordination of activities about space studies had started under the guidance of TUBITAK, and in February 1993, the responsibility of defining the policies of space studies had been given to TUBITAK according to the 1993-2003 Turkish Science and Technology Policy. In 1997, the topic was discussed by The Supreme Council for Science and Technology and a law draft about establishing the “National Aeronautics and Space Studies Council” was prepared by TUBITAK. The draft was presented to the Prime Ministry in 1998; however, it was not finalized due to not achieving a consensus. In December 1999, in order to create national policies on space science and technology, the responsibility of bringing all participants together and starting the necessary studies had been given to TUBITAK. After this decision, in August 2000, TUBITAK prepared a draft for the General Framework for Turkey's National Space Policy and sent it to the relevant institutions and organizations. In 2004, by the Turkish Air Force, the draft for “National Space Policy” and the draft law for “Turkish Space Association” had been proposed to receive opinions of relevant institutions. In 2004, a space exploration working group was established in order to study on space. During the meetings of this group, hundred experts joined and represented thirty-five institutions. 8.8% of these experts were women. During these meetings, the abilities, capacity, originality, vision, and suggestions of organizations and Turkish people had been discussed. As a result, one hundred two project suggestions were made in terms of vision, main program, and sub-programs. During 2005 -2010, seven strategic aims and action fields were determined: improving the awareness and culture of science

and technology, training scientists and increasing the number of scientists, supporting result-based and qualified studies, activating management of national science and technology, reinforcement of science and technology performance of private sectors, improving infrastructure and research environment and, activating national and international ties. It has come to my attention that in these reports, scientists were called gender-neutral, not like man of science or man of letters. In 2005, while the preparations initiated by the TÜBİTAK Presidency continue, “Space Research Group” was established within the body of TUBITAK in order to be better organized, coordinated and directed in an administrative structure. National Space Research Program has been prepared to achieve establishment of Turkish space R&D infrastructure. In 2005, it is acknowledged that Turkey is out of the market of aerospace studies ("Bilim ve Teknoloji Yüksek Kurulu Onbirinci Toplantısı", 2015).

In January 2015, The Supreme Council for Science and Technology conducted 28<sup>th</sup> meeting and 91 people joined as meeting members and guests. As a member, there were no women and as a guest, there were 4 women joined ("Bilim ve Teknoloji Yüksek Kurulu 28. Toplantısı", 2015). The Turkish Space Agency is the Republic of Turkey's national space agency and established in 2018. It is the Turkish government agency in charge of space science, general aviation, and space research.

In terms of aerospace projects of Turkey, the detailed roadmap can be seen in Figure 14 from 1994 to 2020 (Yılmaz, 2016). There are different institutions who joined these projects such as TAI, TUSAŞ, ASELSAN, ROKETSAN, TURKSAT, USAT Center, TUBITAK, TUBITAK SPACE, ITU, TUBITAK BILTEN (Yılmaz, 2016). In February 2021, National Space Program was explained and it is said that in 2023, Turkey is planning heavy landing on the Moon with an international cooperation and, in 2028, soft landing on the Moon with national rocket (Kalelioğlu, 2021).



**Figure 13:** Space Roadmap of Turkey

In terms of women's history in aerospace studies and information about their contribution are not available in the literature. As a result, it is not possible for Turkey to achieve data or information about women in space studies in literature. There is nothing similar to NASA's "Women in Space", "Women@Nasa" informative site for Turkey. I believe that there must be many Turkish women who achieved really significant successes in aerospace field. However, only few of them are mentioned in some news or invited in space-related events such as Nüzhet Gökdoğan, Dilhan Eryurt, Betül Kaçar, Feryal Özel, Burçin Mutlu Pakdil, Bilge Demirköz, and Nazlı Can. Nüzhet Gökdoğan is Turkey's the first female astronomer and first female dean. Gökdoğan is a professor who translated William Marshall Smart's book Spherical Astronomy into Turkish. She served as the dean of the Faculty of Science at Istanbul University between 1954-1956 and 1978-1980 and was the first Turkish Associate Professor of the Astronomy Chair of the Faculty of Science of Istanbul University and the owner of the number one doctoral thesis in the records of the Faculty of Science. Furthermore, one of the first known Turkish women scientists in this field is Dilhan Eryurt. She was the first Turkish scientist worked at NASA. She conducted her work at NASA for 12 years, between 1961



and 1973. Eryurt founded the astrophysics department at METU and served as the dean of the METU Faculty of Arts and Sciences between 1988-1993. In addition, Eryurt was awarded the Apollo Achievement Award for her contributions to the Moon landing project. Astrobiologist Betül Kaçar is a scientist awarded the NASA Young Investigator Award and conducts life-seeking studies in the universe. Moreover, Feryal Özel, a Turkish professor of astronomy and astrophysics, a member of the EHT Science Council and a faculty member at the University of Arizona, took part in the team working on the imaging of the black hole and specially described as “one of the smartest women in the world”. Özel is the first and only Turkish scientist to be included in the Hubble staff of NASA. Astrophysicist Burçin Mutlu Pakdil discovered a very rare double ring elliptical galaxy. The galaxy is known as 'Burçin's Galaxy' in the popular science media (Zona, 2021). Additionally, Bilge Demirköz is a high-energy physics professor at Middle East Technical University in Turkey. She is in charge of the Particle Radiation Tests Creation Laboratory, which is Turkey's first collaboration with CERN (European Organization for Nuclear Research). In terms of different aspect of aerospace studies, the President of the Aviation and Space Law Commission of Istanbul Bar Association, which is founded in 2008, is Ad. Nazlı Can who has serious success in her field ("Havacılık ve Uzay Hukuku Komisyonu", n.d.). I could not find any other information about other woman in aerospace studies in Turkey while searching the literature.

On the other hand, it is aimed that one citizen will be send to the Moon within the scope of National Space Program and this person is planned to be a woman ("Milli Uzay Programı'nda neler var?", 2021). It is said that every person has the dream of going to the space and Turkey will make it happen for ne Turkish citizen to achieve her/his dream. It is also said that “There are some women who volunteer to go as well”. In fact, it is aimed that women are emphasized on and promoted. However, this “as well” (in Turkish “bile”) also shows that women are assumed as in the second place in aerospace field in Turkey.

To be able to learn more about women in space studies in Turkey, I continued to search and found some websites which can be useful to gather information about women's participation academically and practically in this field in Turkey. I gathered data from publicly available sources for Turkey, such as TUBITAK, YÖK TEZ (The Council of Higher Education).

YÖK provides yearly data for different classifications and focus areas. From YÖK, for each year dated from 2013, I downloaded the annual data set and collected the number of enrolled male and female students of aerospace-related departments of universities. Furthermore, I gathered the number of graduates from master's and doctorate by classification of fields of education and training. To obtain detailed information, I found a data set that shows the number of male and female graduate students not only by classification of fields of education and training but also by the type of education such as formal education, evening education, distance education, and distance education from open plan schools. Moreover, I reached the data that contains the number of male and female teaching staff classified as a professor, associate professor, assistant professor, instructor, university lecturer, specialist, and research assistant. By examining these sets of data, I uncovered the annual variation of the number of men and women who participated in aerospace studies as students and teaching staff to see whether the participation of women increases or decreases in which field and what is the most common part that women take.

In addition, YÖK provides open access to all the thesis that are allowed to be archived and made available to full-text access over the internet by the authors in the National Thesis Center Database of the Council of Higher Education. These allowed theses were written by scholars from different universities in Turkey, and they were published down from the 1970s. I wanted to see how many theses are done by women and in which year. In order to get an answer, I resorted to the National Thesis Center Database of the Council of Higher Education. One can search a thesis by keywords, not by filtering the field of thesis, name of university, publishing year, etc. and there is not a provided data set which contains all these theses. That is why I put possible keywords that can

be related to aerospace studies such as “aerospace”, “space”, “aero”, “planet”, “stars”, “radiation”, “sun”, “atmosphere”, “orbit”, “rocket”, “astronaut”, “astrophysics”, “galaxy”, “aviation”, “meteor”, and “spacecraft”. After searching by given keyword, I eliminated unrelated displayed thesis by reading their summary one by one. By doing this, I found nearly 720 papers that are related to aerospace studies. Then I took the provided information about these theses and created a dataset manually that contains the name of the author, the name of the thesis, the level of graduation (master’s degree or doctoral degree), publishing year, the ID number of the thesis and the field of subject. YÖK does not provide the sex of the author, for that reason, I tried to classify the collected thesis in a way that determines whether one’s author is male or female by focusing on the names. For gender-neutral names, I searched the name of the author through Google. To find the correct answer, I added the field name in the searching box too. By doing this, I was able to decide on the sex of the authors with gender-neutral names. Since I was only able to search by keywords and there was not an open-access dataset of the thesis, I must acknowledge that some of the thesis must have been unnoticed. By creating this dataset, I uncovered the number of women and the ratio of women who wrote a thesis on aerospace studies in which degree so far.

Furthermore, TUBITAK provides bibliographic/full-text information of TUBITAK Projects through TRDizin, which is a national database that contains articles in national, peer-reviewed, scientific journals in the subject areas of Science and Social Sciences, as well as the information of TUBITAK Projects through the web page. In order to gather data about TUBITAK projects related to space studies, I resorted to TRDizin and tried to find helpful information. As with the case about YÖK, TUBITAK also does not provide an open-access information dataset about their projects which contains the title, completion year, projects’ number, project’s group, names of the project coordinator and researchers, the sex of the project coordinator and researchers, number of the pages, etc. One has to search projects by putting keywords in the search box and clicking on the search button. Then, the list of projects appears, and each project line contains the title of the project, the name of the researcher, finishing date

as month and year. For further information about the project's group, the number of pages, and the abstract, one has to click on the detail button under each project line. Under these circumstances, once more, I put possible keywords that can be related to aerospace studies such as “aerospace”, “space”, “aero”, “planet”, “stars”, “satellite”, “sun”, “atmosphere”, “orbit”, “rocket”, “astronaut”, “astrophysics”, “galaxy”, “aviation”, “meteor”, and “spacecraft”. After searching by given keyword, I again eliminated unrelated displayed projects by clicking their detailed information buttons, reading their detailed information from the abstract or from the full project’ document itself one by one. For some projects, the topic or studied chemical or material was not familiar to me or easy to classify right away. Hence, I researched the topic, chemicals or materials that are mentioned in the detailed information to understand whether these projects are related to aerospace studies or not. By doing this, I found nearly 200 projects that are related to aerospace studies. I took the provided information about these projects one by one and created a dataset manually that contains the name of the project coordinator, the names of the researchers, the name of the projects, projects’ group, the completion date, number of pages, and the field of the subject as keywords. TUBITAK does not provide the sex of the project coordinator and researchers. In this case, I again manually classified the collected projects in a way that determines whether the project coordinator and researchers for each project are male or female. For gender-neutral names, I searched the name through Google and reached the personal information, pictures and news helped me to identify the sex of that person. Owing to the fact that I was only able to search by keywords and there was not an open-access dataset of the projects, I must concede that some of the projects must have been unnoticed. By examining this dataset, I uncovered the number of women and the ratio of women who participated in projects in the aerospace field as a coordinator or researcher.

#### **2.4.1 Women’s Contribution in Aerospace Studies**

From YÖK TEZ and TUBITAK, for Turkey, women’s contributions to aerospace studies have been discussed for the first time in the Turkish literature

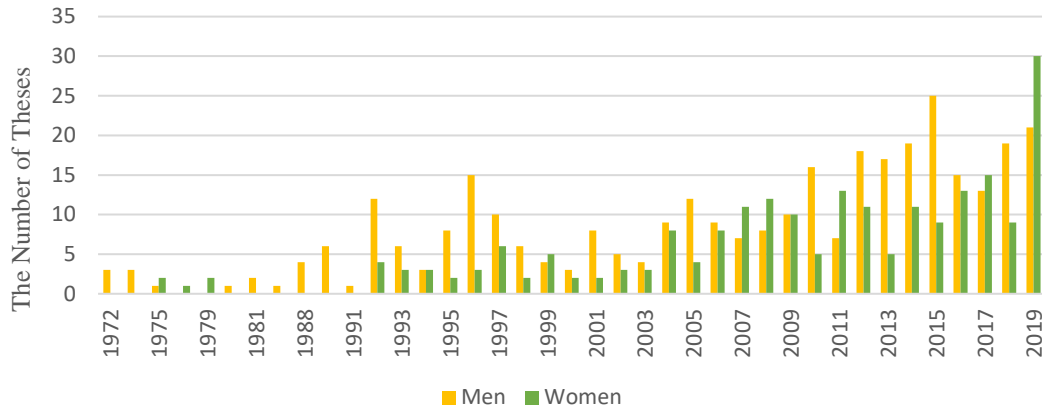
to my knowledge. They have been involved in and made a significant contribution to the aerospace field in terms of academic studies and running projects.

#### **2.4.1.1. Contribution in Academic Knowledge**

As a result of analysis on the dataset created by myself with the obtained information from the Council of Higher Education, women's academic contribution as writing thesis and contribute in literature go back to 1975.

According to data I gathered from YÖK, in aerospace studies, women received master's degree and wrote 217 theses. The first master's degree thesis about the aerospace field written by a woman was in 1975. The rate of women receiving their master's degrees and writing thesis varies from year to year, it does not have a regular decrease or increase. For women, the maximum number of theses written in a year is 30, in 2019. The minimum number is 1 in 1977. There were also years when women did not write any thesis in aerospace studies such as between 1980 and 1992. The total number of master's degree theses written by men is 331. The first master's degree thesis about the aerospace field written by men was in 1972. For men, the maximum number of theses written in a year is 25, in 2015. The minimum number is 1 in four different years.

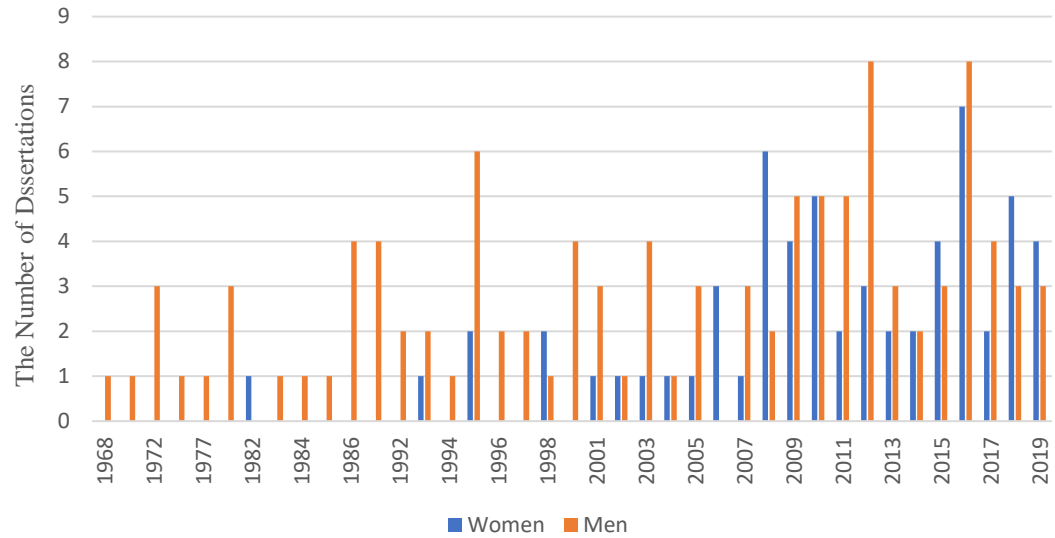
Women received a master's degree and contributed in the literature of aerospace field 40% and men contributed in the literature of aerospace field 60%. It is seen that women started to complete their master's degree in the aerospace field nearly at the same time with men with slight delay—yearly distribution and comparison of completed thesis between women and men given in Figure 15.



**Figure 14:** Comparison of Completed Master’s Degree Thesis between Men and Women over the years from YÖK

In terms of doctoral studies, in aerospace related fields, women received doctoral degree and wrote 61 theses. The first doctoral thesis about the aerospace field written by women was in 1982. Men received their doctoral degree and wrote 107 theses. Similarly with master’s degree, the rate of women receiving their doctoral degrees and writing thesis varies from year to year, it does not have a regular decrease or increase. For women, the maximum number of theses written in a year is 7, in 2016. The minimum number is 1 in seven different years. Between 1982 and 1993, there were no women wrote doctoral thesis in aerospace field. The first doctoral thesis about the aerospace field written by men was in 1968. For men, the maximum number of theses written in a year is 8, in 2012. The minimum number is 1 in ten different years.

Women participated in doctoral studies and contributed to the literature of the aerospace field 36% and men contributed in the literature of aerospace field 64%. It is seen that the ratio of women’s contribution in doctorate studies is pretty closeto the ratio of their contribution in master's degree. It seems like women started to enter doctoral studies in the aerospace field fourteen years later than men—yearly distribution and comparison of completed thesis between women and men is given in Figure 16.

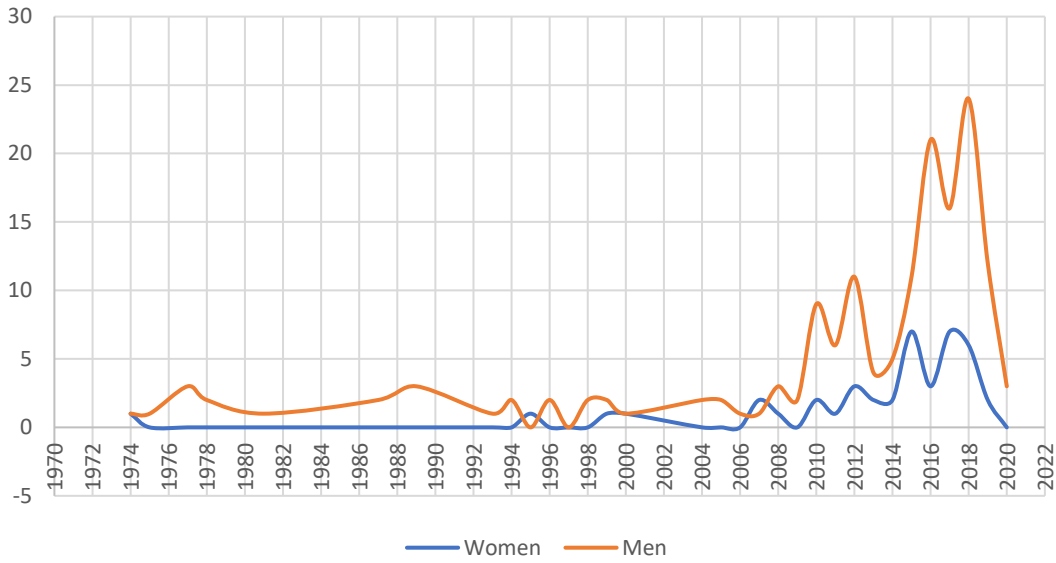


**Figure 15:** Comparison of Completed Doctor’s Degree Thesis between Men and Women over the years from YÖK

#### 2.4.1.2 Contribution in Scientific and Technological Research Projects

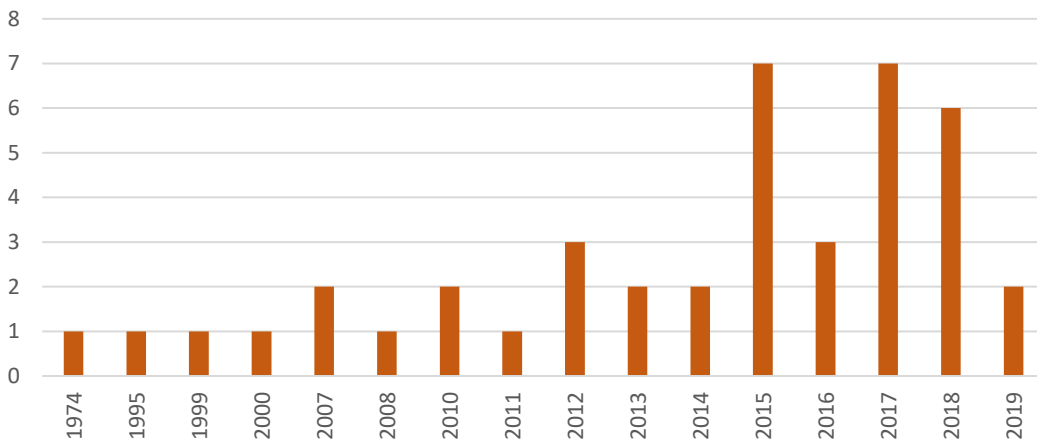
In Turkey, the major funder for science, technology, and innovation is TUBITAK, and it has different categories which are classified by focusing on the type of the project or performer (Akçomak et al., 2021). TUBITAK provides funding for R&D projects in several fields. In terms of R&D projects in the aerospace field, as a result of created dataset by myself with the obtained information from TRDizin, it is seen that 198 projects were funded by TUBITAK and completed. The projects have one project coordinator who proposed and applied for the funds for the project. If it is needed, researchers also take place in projects.

As a project coordinator, 163 people participated and there were 34 women and 129 men. Women conducted and completed 42 projects, and men conducted and completed 156 projects. It is seen that women contributed R&D activities in the aerospace field 21% with the support of TUBITAK. The detailed information about the yearly contribution of women and men is given in Figure 17.



**Figure 16:** Yearly Comparison of Number of Women and Men as Project Coordinators of TUBITAK Funded Projects in Aerospace Field

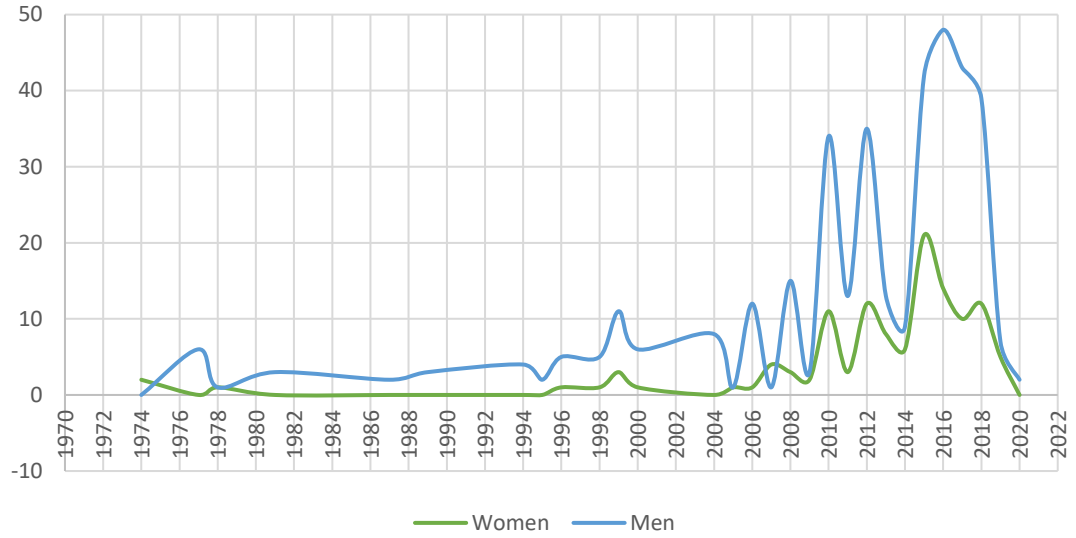
Furthermore, in Figure 18, yearly distribution of women as project coordinator is given in more detailed way.



**Figure 17:** Yearly Distribution of Number of Women as Project Coordinator of TUBITAK Funded Projects in Aerospace Field

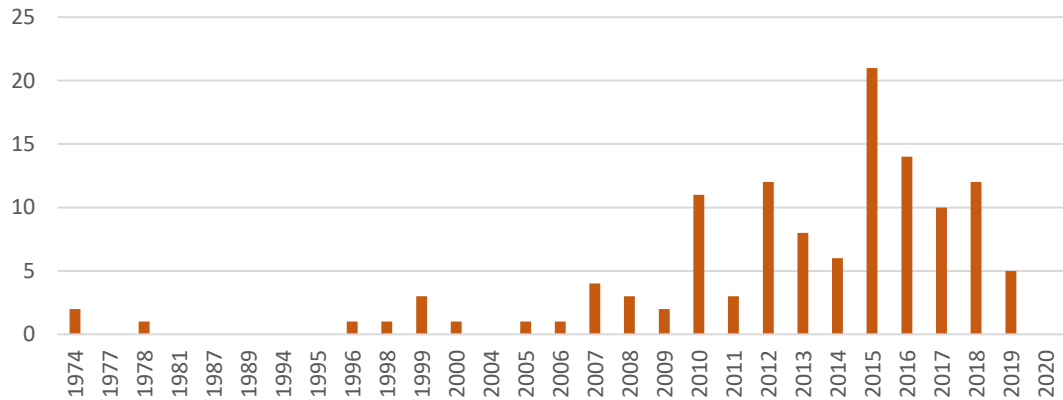
As a researcher of the projects, 438 people participated. The total number of women who participated in conducted R&D projects in the aerospace field is 111, the number of total participations is 130. The total number for men is 317, the number of total participations is 393. The detailed information about the yearly contribution of women and men is given in Figure 19.





**Figure 18:** Yearly Comparison of Number of Women and Men as Researchers of TUBITAK Funded Projects in Aerospace Field

Furthermore, in Figure 20, yearly distribution of women as researcher is given in more detailed way.



**Figure 19:** Yearly Distribution of Number of Women as Researcher of TUBITAK Funded Projects in Aerospace Field

Moreover, for the projects that were run by a woman project coordinator, there were 12 women and 66 men who participated in as researchers. For the projects that were run by a man project coordinator, there were 89 women and 327 men who participated in as researchers.

Furthermore, it is seen that these R&D projects are funded by ARDEB, which is the presidency in TUBITAK. As it is given in RIOT2020 Research and

Innovation Outlook of Turkey, ARDEB coordinates its activities by classifying scientific groups by their field (Akçomak et al., 2021, p. 190). Detailed information about projects and their groups in the aerospace field can be seen in Table 4.1.

**Table 4. 1:** Distribution of Projects' Groups funded by TUBITAK in Aerospace Field

Project Group	Number of Projects	Project Group	Number of Projects
TUBITAK MAG	65	TUBITAK KBAG	3
TUBITAK MFAG	46	TUBITAK SOBAG	1
TUBITAK TBAG	31	TUBITAK TBAG Ü	1
TUBITAK EEEAG	23	TUBITAK SBAG	1
TUBITAK ÇAYDAG	12	TUBITAK COST	1
TUBITAK TBAG CNR	9	TUBITAK YDABÇAG	1
TUBITAK MİSAG	4		

In terms of receiving master's degree and doctoral degree, from Figure 15 and Figure 16, it can be seen that women's participation level is lower than men. However, I found out that women's participation in master's degree is higher than their participation level in doctoral degree. Gendered roles can be a huge reason for this decrease in number of women in doctoral degree. At some point, women are expected to get married and have kids. When a woman receives her master's degree, she is almost 24-25 years old. If I consider that doctoral degree takes nearly 4 years, that woman will be nearly 30 years old which is assumed as "too late for the marriage" or "spinster" age. As a result, some women do not choose to continue their educational lives or have the permission to continue their educational lives due to gendered expectations of their fathers, brothers or husbands. Additionally, having kids can be one reason too since raising children

is accepted as women's duty. Women have to drop out and take care of their kids and husbands, fulfill domestic responsibilities. To be able to understand the reasons in more detailed way, further studies can be carried out to see why women do not choose to continue their educational lives after master's degree in aerospace field.

From Figure 15 and Figure 16, it is seen that, between 80s and 90s, both the number of women and men who received their master's degrees or doctoral degrees in aerospace studies decreases, in fact, for some years becomes zero. I think, one of the reasons for these diminishments can be the coup of 1980. It is known that this coup impacted every piece of people's lives, including education. It is mentioned by Kırkpınar that, after 12<sup>th</sup> September, scientists were not able to run their studies in science home and any science policy could not be established, could not be seated during these times (Kırkpınar, 2009, p. 138).

In addition, from Figure 17 and Figure 19, it can be seen that women's participation level as coordinators and researchers of TUBITAK funded projects in aerospace field is decreasing after 2009 while men's participation level increases. I think that government policies on aerospace studies can be a reason for that. As far as I found from open sources that government focuses on increasing Turkey's power and success in defense industry and aerospace field (Ercan & Kale, 2017). They build various institutions and set different goals about aerospace achievements to be able to find a place in aerospace market, being in better place in aerospace race, able to fulfill projects and goals independently, ensure security more and develop Turkey's economic status and welfare level (Ercan & Kale, 2017). It is clear that, as a result of these endeavors, Turkey has been developing in defense and aerospace field exceedingly. As I acknowledged that aerospace field is male-dominated, the increased level of aerospace studies and new aerospace-related institutions can result in increased male-domination in aerospace field. I did not find any gender-related study in aerospace field during these governmental developments, that is why I think that gender-disparity was not on the table so much. For this reason, I believe

that there should be impact analysis on these policies to be able to see that whether they impact women's participation or not. Also, I believe that these institutions should be built in a gender-neutral way that women can participate and welcome more than before. I know that one of the goals of the government is about increasing labour force and human resources in aerospace field to achieve more success with more knowledge. In this respect, there can be future studies on how can we achieve that with more women in aerospace field.

Furthermore, from Figure 14 and 16, it can be seen that the participation level as coordinators and researchers of TUBITAK funded projects in aerospace field is very low for both men and women compared to previous years's data. I believe that the reason for that is global pandemic Covid-19. With this pandemic, everything is impacted from social life to education and working life. Due to quarantines, lockdowns, health problems and increased nervousness, women and men were not able to focus and complete their projects. Additionally, women's participation level is decreased more than men. In that case, I believe that happened because taking care of ill people, preparing healthy food, taking care of children at home are duties of women in Turkey. With all these tiring responsibilities, women are not able to focus on their career and studies. Not being able to find available childcare for their children is also one of the biggest reason (Kashen et al., 2020). Further studies can be done in order to understand how Covid-19 has been impacted women's labour force and academic studies in aerospace field.

In terms of aerospace studies in Turkey, it can be acknowledged that women's participation level and contribution percentage is something that cannot be denied and neglected. However, it is clearly less than men and aerospace field in Turkey is male dominated both in education field, academic life and professional working life. In this study, I found out whether there exists gender discrimination in aerospace field in Turkey since it is male-dominated and, I provide possible science and technology policies and further suggestions to eliminate this discrimination if it exists.

## CHAPTER 3

### METHODOLOGY

In this research, I used qualitative method. To analyze and understand women's roles and contributions in space studies and understand the experiences of women and challenges they faced in aerospace studies, I gathered primary data by conducting semi-structured interviews and made field observations. In this chapter, the selection of methods and data collection process will be provided.

#### **3.1 Interviews**

I decided to apply a semi-structured interview method since the topic is extremely subjective and delicate. There is no instrument of inquiry is more revealing to use for certain descriptive and analytic purposes. This method is very suitable to see the mental world of the individual and understand the logic about how one person sees the world (McCracken, 1998, p.9). Additionally, this method also enables people to see the lifeworld of the individual and understand her/his daily experiences and mindset (McCracken, 1998). Due to the fact that all the experiences, challenges, and happenings differ individually, I applied a semi-structured interview method in order to understand inner feelings and thoughts, to gain deeper information about experiences that had become challenges, to glimpse the reactions that show emotions and mental world of an individual and. It is not an exaggeration to say that talking about these kinds of things can reveal hidden emotions and trigger one's trauma so; it was vital for me to lead the conversation in a way that I can answer my research questions without making participants uncomfortable and triggered, maybe upset or angry.

I began conducting the interviews in February 2021. Before the data collection, to be able to perform the further interviews adequately and to test the interview guide, I did three pilot interviews as a trial for a set of questions. My main goal was to get some feedback on the set of questions and do initial practices. In order to understand that questions are applicable for both women and men, I conducted pilot interviews with both women and men with different seniority.

The main aim of the interviews is to analyze the aerospace field in order to understand whether there exists gender apartheid by gathering information about personal experiences, contributions in space studies, participants' opinions (men and women) about women's roles, their importance, gender-based experiences, and faced challenges. For this purpose, employees from aerospace-related companies and academicians, and students from aeronautics and space studies are recruited for this research. I contacted these people and made an effort to elaborate on selecting interviewees who have different seniority, the field of work, background from other participants. I sent an invitation letter that explains the study and primary aim of the thesis via email and contact requests explaining my intention and purpose to do an interview via LinkedIn. Hence, all the participants were aware of my study, and they participated voluntarily. At first, I could not get any reply to emails and requests. I started to re-mail the people invited via email. After this, I began to get answers; some of them were positive, and some of them rejected the invitation. Nine of the invited people via email accepted to join, and two of the invited people via LinkedIn accepted my request and agreed to participate. After conducting some interviews, I had difficulties reaching people whose backgrounds or occupations are different from current participants who accepted to join the study by then. I started to get in touch with some of my friends and previous co-workers who could help me by personally contacting possible interviewees, explaining my purpose to them, and asking for participation. That method allowed me to find three more interviewees with different experiences. In summary, I employed a mix of theoretical and snowball sampling for the study.

I was planning to interview with both women and men to be more objective, to not only count on women’s perspectives, to able to see different point of views of both sides and, to understand the thoughts of men about gender discrimination. I thought that this will help me to see how women and men see disparities and whether men are aware of gender discrimination or not. That is why I conducted pilot interviews with both women and men to achieve questions that are applicable for both sides. However, I could not get the attention of men when they understand that this study will focus on women. They generally replied me as follows: “you should be in touch with women I think”, “I do not think that I will be helpful since I am a man”, “I cannot provide information, I do not work with women but I know a female friend who works in aerospace field, I can ask her” and etc. In result, I was only able to have three male participants. Due to this struggle, I did not achieve men’s perspective about gender discrimination as much as I wanted to. Nevertheless, it helped me to gain different information about aerospace field.

Due to the protection of privacy, the interviewee’s personal information is not given. General information about interviewees’ gender, occupation, academic background, age, and seniority level can be seen in detail in Table 3.1.

**Table 3. 1:** General Information about Interviewees

<b>Int_I D</b>	<b>Sex</b>	<b>Age</b>	<b>BS Departmen t</b>	<b>MS Department</b>	<b>Seniority</b>	<b>Years of Experience</b>
1	F	57	Economics	-	Senior Project Officer	29
2	F	43	Mechanical Engineering	Mechanical Engineering	Design Manager	17

**Table 3. 2:** General Information about Interviewees (continued)

3	F	29	Mechanical Engineering	Industrial Engineering	Chief Engineer	5
4	F	35	Aerospace Engineering	Aerospace Engineering	Development Team Leader	14
5	F	26	Industrial Engineer	-	Senior Engineer	3
6	F	31	Chemical Engineering	Electrical, Electronical and Chemical Engineering	Development Leader	7
7	F	36	Industrial Engineering	Master of Business Administration	Project Management Unit Supervisor	13
8	F	23	Aerospace Engineering	Aerospace Engineering	Student	1
9	M	24	Industrial Engineering	-	Junior Engineer	2
10	M	26	Industrial Engineering	Data Science	Senior Engineer	5



**Table 3. 3:** General Information about Interviewees (continued)

11	F	42	Physics	Physics	Scientist and Professor	21
12	F	32	Astronomy and Space Sciences	Human Resources	Business Development Specialist	6
13	M	47	Electrical Engineering	Electrical Engineering	Professor and Director	25

I was able to conduct 13 interviews. Due to the Covid-19 pandemic, besides the first three interviews, I was not able to make face-to-face interviews since people did not prefer to get too close with a stranger who can have Covid; therefore, I conducted the interviews through Zoom or telephone and they took nearly between 45-60 minutes. The in-depth interviews took approximately 1.5 hours. I sent the set of questions if the interviewee wanted to go over it beforehand to save time and see what was waiting for them. I recorded the interviews through Zoom or the voice recorder application on my cell phone after getting permission from the interviewee to be able to transcribe and analyze them in a detailed way.

It is evident that every participant's experience is different from the others due to their academic background, level of experience, and age. As a result of the pilot interviews, I realized that one type of set of questions was not efficient. Although the questions were applicable for both sexes, it was not efficacious for different years of seniority. To this end, I categorized participants into three different segments: seniors, juniors, and students. Three different sets of questions were designed in accordance with the participants' category. To be able to make participants more comfortable in terms of expressing their thoughts and feelings, I conducted interviews in Turkish. The set of questions

and the main aim of asking these designed questions for three categories can be seen in detail in Table 3.2.

At first, since I was not able to find people from different backgrounds, I reached the redundancy at the 7<sup>th</sup> interview, so I led the conversation in a way that I would be able to find one hint and go after it to reach some unprecedented information in the remaining interviews. That is why in some interviews, there were some added questions. After reaching more participants with various backgrounds, I added different questions focused on the interviewee's different backgrounds to be able to get anything as much as possible since it was challenging to reach more people in that field. I was more flexible and focused about arranging the questions in a way that the interviews might bring opportunities for more information.

**Table 3. 4:** Set of Questions Designed for Senior, Junior, and Student Category

<b>N o</b>	<b>Questions</b>	<b>Junior</b>	<b>Senior</b>	<b>Student</b>	<b>Main Objective</b>
1	Can you tell us about your school, education history and vocational training?	x	x	x	To have an introductory information on interviewees and their background
2	How was your university department selection? Is there a special reason for this department / profession?	x	x	x	To have an introductory information on interviewees and their background

**Table 3. 5:** Set of Questions Designed for Senior, Junior, and Student Category (continued)

3	Have you received any comments against your choice of profession? Have positive or negative comments been made?	x	x	x	To have an introductory information on interviewees and their background
4	Can you talk about what your profession has for you?	x	x	x	To understand interviewees' reasons and aims to choose that profession
5	How was your changing process between positions you have worked so far in your professional life?		x		To understand whether there is gender apartheid in space studies
6	Can you tell us about your application and acceptance to the position you worked in?	x	x		To understand whether there is gender apartheid in space studies
7	Can you tell us about the work you have done and are doing in the field of space? What do you think is the importance of your work? With whom do you carry out these works and how is the distribution of tasks done?	x	x	x	To understand whether there is gender apartheid in space studies

**Table 3. 6:** Set of Questions Designed for Senior, Junior, and Student Category (continued)

8	Are the images drawn for women and men the same in your profession? Do you think the level of respect between the sexes is the same?	x	x	x	To understand whether there is gender apartheid in space studies
9	Can you talk a little bit about the school and classroom environment? What are the positive and negative aspects for you?			x	To understand whether there is gender apartheid in space studies
10	Do you know about the promotion system in your business life? Is it obligatory to provide necessary conditions?	x			To understand whether there is gender apartheid in space studies
11	How is the job promotion system? Is it obligatory to provide necessary conditions?		x		To understand whether there is gender apartheid in space studies
12	How is the gender distribution in the school environment and is there a perception of gender discrimination? Have you encountered any situation due to gender difference or sexism?			x	To see whether there is gendered structure in space studies

**Table 3. 7:** Set of Questions Designed for Senior, Junior, and Student Category (continued)

13	How is the gender distribution among your managers?	x			To see whether there is gendered structure in space studies
14	What was the gender distribution among the academicians/employees you have worked and worked with so far?		x		To see whether there is gendered structure in space studies
a)	(If female ratio is higher) How did this situation make you feel? What were the pros and cons?	x	x		To understand interviewee's opinion about gendered structure
15	Can you talk a little bit about the working environment? How are your interpersonal relations, educational background and average age? What are the positive and negative aspects for you?	x	x		To understand the environment among the interviewee
16	How is the gender distribution in your working environment? Is there any gender apartheid? Have you faced any situation because of gender difference or sexism?	x	x		To understand whether the interviewee faced gender-based challenges or experienced gender discrimination

**Table 3. 8:** Set of Questions Designed for Senior, Junior, and Student Category (continued)

17	How do you evaluate your work and life? Do you think there is an overpowering side? Why?	x	x		To understand whether division of labour is gender-based
a)	How do you divide the house (if married)?	x	x		To understand whether division of labour is gender-based
b)	(If the participant is female and has children) Did you encounter any difficulties during pregnancy? Has pregnancy affected your career? Have you received any negative comments in this direction? Did you use maternity leave?	x	x		To understand women's right in aerospace companies and whether they faced gender-based challenge
c)	(If there are children) How did you do the division of labor at the stage of raising a child? Did you receive support from a caregiver, kindergarten, etc.?	x	x		To understand whether division of labour is gender-based

For the analysis of the data that I gathered from interviews, I transcribed them and analyzed them to gain an understanding of what participants think and

experience in terms of gender issues. I analyzed the textual data of interviews by using QDA Miner through 124 assigned codes, and these are provided in Appendix B.

### **3.2 Observation**

In order to examine organizational structure and understand whether there was gender discrimination in space studies, I decided to conduct an observation as fieldwork since “Observations put researchers right where the action is, in a place where they can see what is going on” (Corbin and Strauss, 2008). In 2019, I did an observation in a test field of one of the companies that performs manufacturing in the aerospace field. Due to the secret nature of the factory and the project, I am not able to share further details about the place and specific purpose of the test. Doing an observation enabled me to observe and analyze people’s behaviors, reactions in a natural environment. During the observation, firstly, my intent was to make a naturalistic observation and not intervene. I sat down and let the scene flow. I waited for something to catch my attention that could be helpful and an elucidator to answer the research question. I took condensed notes and expanded notes, and avoided any contact as much as possible in order to not change the dynamics of the team. However, sometimes I took part in conversations unintentionally to not alter the flow of the events. As Patton (2015) says, “the impressions and feelings of the observer become a part of the data to be used in attempting to understand a setting and the people... The observer takes in information and forms impressions that go beyond what can be fully recorded in even the most detailed field notes”. Surprisingly, getting in touch and having small informal chats with people in the setting enabled me to have firsthand experience and my impressions and feelings became a part of the data which turned out to be more important than my expanded notes.

After completing observation, as an addition to the condensed notes and expanded notes, I also transcribed my impressions and feelings as a result of conversations and interactions that I experienced with the people in the field. I analyzed them in order to answer the research question.

## CHAPTER 4

### FINDINGS

After all the interviews and literature reviews, it is not an exaggeration to say that the biggest inequality in the workplace is between women and men. One of the participants who has many years of experience in aerospace studies indicates that:

*I think the lines as male and female employees are not the same; they have never been the same... never. So, it was the same among these employees. In other words, the woman was always one step behind. But in the time, I lived, there was a separate line between men and women... this is how I think, and this was evoked. This is not only in our company but also in Turkey. (Interview 1)*

Considering the years of experience, it is clear that gender apartheid in aerospace studies already existed almost 25 years ago and continues to exist now. According to interviews, there are different kinds of discrimination in several ways from different people. In this chapter, detailed information and styles of gender discrimination in aerospace studies will be explained.

#### 4.1 Glass Ceiling

“Glass ceiling” term implies the fact that a skilled person who wants to advance in the career is got stuck in the lower level because of the discrimination, mostly based on racism and sexism (Babic & Hansez, 2021). It was initially popularized in 1980s (Reiners, 2021). The existence of a glass ceiling prevents hierarchical advancement in the career. In this case, in terms of sexism, there is a sex-based invisible obstacle that prevents women from achieving higher leadership positions, elevated professions, and executive roles. This results in keeping women in middle-management roles since the glass ceiling occurs



more frequently at top and senior management levels than lower positions (Cotter et al., 2001).

From the interviews, it is easily understood that there exists a gender-based glass ceiling in companies carrying on a business in terms of space studies. Out of 13 interviews, seven interviewees indicated that there are no women or so fewer women in executives and top executives.

One of the employees who work at the leader level indicated that:

*It seems like it comes independently up to the executive engineer level, but a little more...I don't know if it's political... There are no women in the executive board. There are no women in the board of management. When I think about the people I work with, there aren't really many women at the managerial level. (Interview 6)*

I encountered similar responses from a different participant which is:

*When you look at our company, how many female directors are there, how many female managers are there, how many men are there. I think there are 3 female directors, but there are 20 male directors. Even from here, this is understandable... For example, there are 7 assistant general managers, all of them are male. So is our executive board. The board of directors is also full of males. (Interview 4)*

The other participant, who is a chief engineer of another company, also remarked on the existence of glass ceiling and questioned this obstacle as:

*We have a high number of female managers at the first level, but when you rise above them, almost none... There isn't any; they are not evaluated for the top manager or higher levels, I do not know why... for example, we talk about it among ourselves since we wonder how many assistant general managers we have, the woman was only one, but she is not one of these technical works, she is from the finance department, I guess. I don't remember the area exactly... (Interview 3).*

Both the participants are working at a lower position than managing level and above. If we focus on the expression of Interviewee 2, who is a manager, it is also mentioned that:

*....my top managers are all male...*

It is also seen in the interviews that the impact of glass ceiling increases as the level increases. For the positions lower than manager level, the existence of glass ceiling does not directly impact women majorly since they are at the beginning of their career and not qualified to climb the corporate ladder yet. On the other hand, women who work at the junior levels also acknowledge that there is something preventing women from hierarchical ascension and evolving in their professional level within the company.

*... the management, the executive engineer level that is a notch above being manager, directorship...It is very difficult to see female employees at these levels... So, I don't know if women can easily access the upper levels; this makes me think a bit... (Interview 5)*

In 2019, total female employment at the executive level accounted for 0.9% of total employment (KAGIDER, 2019). Another women interviewee also indicated that there is something different about achieving higher positions, and this is not women's turn yet.

*It seems like there are more and more different criteria towards the top, so it's not our turn yet. (Interview 3)*

In accordance way with the findings of interviews about glass ceiling, I look for a number of women in boards of management of different companies in aerospace studies ("Yönetim Kurulu | Hakkımızda | ASELSAN", n.d.), ("Yönetim Kurulu - HAVELSAN", n.d.), ("Yönetim", n.d.), ("Yönetim Kurulu | TÜRKİYE BİLİMSEL VE TEKNOLOJİK ARAŞTIRMA KURUMU", n.d.), ("YÖNETİM KURULU", n.d.), ("Üst Yönetim", n.d.), ("MAKİNE ve KİMYA ENDÜSTRİSİ A.Ş", n.d.), ("BAYKAR Teknoloji", n.d.).

**Table 4. 2:** Comparison of Number of Women among the Members of Boards of Management in Aerospace-Related Companies

Company	Number of Women	Number of Members
Aselsan	1	9
Havelsan	0	6

**Table 4. 3:** Comparison of Number of Women among the Members of Boards of Management in Aerospace-Related Companies (continued)

TUSAS	0	7
TUBİTAK	0	6
ULAK	0	6
SSTEK	0	3
MKE	0	7
BAYKAR	0	3

It can be easily seen in Table 4.2 that the number of women is extremely low on boards of management. There are some companies such as ROKETSAN, SDT, etc. I could not find the data. This supports our conclusion that glass ceiling exists in this field.

#### **4.2 Discrimination by Employers and Executives**

In a vertical hierarchy, it can be easily seen that top levels put pressure on lower levels and make them feel their precedencies in terms of making final decisions, making choices, and giving feedbacks. Since all these cases tend to be subjective to a large extent, people from top levels can shape their behaviors and opinions when it is come to being about a specific person. They can change their attitudes toward one to another one. This increases the possibility of inequalities. While making the interviews, it became more and more evident that women experience discrimination mostly from their employees and executives.

*We saw and observed the discrimination of my manager among female employees because... if it weren't, maybe we would have been on a different path if it weren't for her perspective. (Interview 1)*

As a result of interviews, inequalities by employees and executives from past to present can be classified in terms of hiring, promotion, payment, attitude, supporting, joking, and expectations.

### 4.2.1 Hiring Inequalities

According to the World Bank, in Turkey, women can get a job in the same way as a man ("Workplace", n.d.). However, according to the results of the household labor force survey, in 2019, the rate of employed people aged 15 and over in Turkey was 45.7%, while this rate was 28.7% for women and 63.1% for men ("Women in Statistics, 2020", 2021). Furthermore, in TÜİK's Labor Statistics, III. Quarter: July – September 2021 Report, the rate of employed people aged 15 and over in Turkey was 51.4%, 28.2% for women, and 63.0% for men ("Labour Force Statistics, Quarter III: July-September, 2021", 2021). This means that for the last three years, the employment ratio of women is nearly half of the men. In this regard, from five different women participants, it is implied seven times that there is an inequality between women and men in terms of hiring.

There are some reasons for not choosing women over men; one of them is gender roles and expectations from women to get married and have kids instead of working. One participant witnessed similar discrimination abroad and expressed that:

*On the other hand, scholars also maintain this attitude towards women and "she can't do it anyway" ... they even said something to someone the other day, "Yes, you are already at the age of having children, you may be". (Interview 11)*

For Turkey, similarly, one participant mentioned some experiences of other women during the job interviews that:

*No, actually, for example, I hear that some of my friends in other companies experience such sexist approaches. There are still such approaches. (Interview 8)*

Sometimes, women are not considered for all-male working places since it is believed that working with men can make her uncomfortable. One interviewee referred to this issue as:

*There are some sections that I respect, hmmm frankly. For example, as far as I understand, they can't hire a female technician to the integration*

*line because they are all men and I think they can't because they think that a woman who will come there might be uncomfortable (Interview 2)*

In the same way, asking for gender-related personal questions during job interviews is a commonly faced situation for women.

*... "Do you have a boyfriend?" They didn't ask me, but I think I've heard from another friend of mine. (Interview 8)*

The reason for asking this question is to figure out whether the women candidate will be permanent from two different points of view. One of them is about having a boyfriend who lives in a different city. In this case, due to gender roles, the expectation of the society is that women need to go wherever their husband is in since her place is near her husband even if she has to quit her job and is unfamiliar with the city her husband lives in. The other one is about her husband's permission to work. In Turkey, women can quit their job without any explanation more than "my husband does not let me work here" and she has to right to receive material compensation. Normally, if one quits, she or he cannot recover damages. In accordance way with this case, one participant indicated that:

*They asked me if I had a boyfriend. So, I was a little uncomfortable. I don't know, it sounded pointless. I guess she wants to find out if you are in this company permanently if you have someone in another city or go there (Interview 5)*

Additionally, I also received so many comments due to my sex and physical appearance such as "You seem so nice, petite and sweet, can you actually be able to do this job in aerospace field?", "Do they (male superiors and managers) really listen you?", "Can you able to explain your reasons and demands in the production place to the middle-aged male technicians?", "People cannot guess what important and huge things that you are working on by looking at you"

It is obvious that women experience hiring inequalities and gender-related approaches during job interviews in the aerospace field.

#### 4.2.2 Promotion Inequalities

One of the other inequalities that women face is promotion inequalities. Promotion discrimination occurs when women who have achieved the same level of success as men are treated differently in promotion decisions and access to additional training (Palaz, 2002). As with the case of glass ceiling, women are the second choice for promotion decisions.

During the interviews, promotion inequality mentioned so many times from six different participants. One participant mentioned that promotion inequality occurred just because the candidate for that role was a woman:

*... There was a woman who also had a lot of difficulties, she had a hard time too, just because she was a woman... (Interview 6)*

For most companies, it is the same that decisions for promotion need to be approved by the manager. That is one of the main reasons why promotion inequality exists; as we mentioned in the glass ceiling section, managers' approval makes it more possible to discriminate, as one of the interviewees indicated:

*Of course, your manager's approval is also required here, this part may be subjective. (Interview 9)*

Since it is mostly subjective, additionally, managers use promotion as a source of motivation even if the person who is in our cases is a male does not fairly deserve that raise. It makes one to think that whether it will be the same if that person was a female. One of the interviewees experienced exact same inequality and expressed that:

*But for example, they (her managers) gave a promotion to someone who came to the unit later in the department I worked for and was not promoted in the previous place, who didn't really work as much as me, at the same time as me. This was something that everyone was surprised by, but our manager was placing him above others, he had brought it himself. He didn't even hold expertise in the work we did there. He was not good in terms of work motivation, but that was something like "let's give it a promotion, he would be motivated". So, this situation definitely boils down to subjectivity. (Interview 4)*

When women had enough of these kinds of inequalities, they quit or were forced to quit by exercising control over them by not giving them what they deserve without any reasonable explanation rather than gender discrimination. One of the participants witnessed similar inequality as follows:

*For example, we have an elder who left the company and founded a company because she was not given the title of manager or director, although she really deserved it. (Interview 6)*

Despite these inequalities, some women endure these challenges and keep going. However, these experiences actually have a significant impact on them, and they begin to act in a way that they play the game by the rules, maybe unwittingly, so nobody can prevent them from promotion due to gender discrimination. This shapes their further actions, dedications, and defensive force. One of the participants mentioned that:

*The old generation, due to these kinds of troubles, are in the opinion of “if I say something, maybe I can't get seniority” or “if I say something, maybe it will be like this...” (Interview 6)*

This acceptance makes other women accept the fact that even if they do their job and deserve an upper position, the final decision is always up to someone, generally, up to a man. Disturbingly, the “inevitability” is accepted by so many women. One participant explains this inevitable fact as:

*Sometimes we have to work miracles in order for us to rise. Inevitably, they choose the man; they go for something like that... (Interview 4)*

Some women, they are still questioning this promotion inequality and trying to understand the mindset of men. Since it is gender-related discrimination, they try to figure out which gender difference makes them discriminate. One participant questioned promotion inequality as follows:

*When it comes to a decision mechanism, I wonder if women are keeping it in the background because they think that they can't always be there when they want, because they evoke the concept that “I have to take care of my mother” a little more like this, “I have a child at home”, “I need to take care of the house a little more”. I do not know. (Interview 6)*

Another participant experienced promotion inequality and did not try to figure out the reasons; she directly asked the manager and described her experience as:

*For a managerial position, there are two people with the same seniority and two people with similar characteristics, one male and one female. One day, a woman is looking, the other is a manager. She said, "You never told me how such a thing happened?" yes... it really happened in our company. Then the manager, that is our joint-manager together, he said something like, "you are already a woman, now they will not listen to you, you will be peaceless, you will be unhappy". (Interview 4)*

From this experience, it is clear that expectations from women are so low, and it is believed that women cannot establish authority among the team they lead. Women are not even given a chance to try and see. The manager decided opinionatedly and did not see any reason to hide his bias against women. Clearly, bias against women is one of the reasons for promotion inequalities. Even sometimes it is assumed as a normal thing due to the impact of religion, as one of the participants mentioned as:

*I also heard that there is a fake hadith that is circulating around saying, "don't choose your managers from women", even those who say that and this man tells you in a very natural way. (Interview 11)*

The promotion inequality is resulting in fewer women rate in top levels due to the fact that women are less preferred to be promoted and, step by step, their existence in managerial levels decreases. The problem turns into something that there is no women candidate to promote to the next top level. One participant indicated that:

*Among my managers... now... the number of women is very low; therefore, the number of women in managers is also low. (Interview 8)*

It is obvious that women experienced promotion inequalities in the aerospace field and these inequalities come from gendered-reasons without any need for hiding that discrimination.



### 4.2.3 Payment Inequalities

Male workers and employers in Turkey have prejudices, and this societal norm encourages distinct types of male and female roles. The male role is supposed to be the primary source of their family's income, i.e., "head of the household," while the female role is suggested to be mother and housewife, with their primary task being domestic duties and only secondarily as workers. For example, all women in society were presumed to live with a man, either their husband or their father. Women's wages are viewed as a supplement to men's salaries; therefore, their lower income and poorer status in the workforce are not considered problematic by society (Palaz, 2002).

*No, of course, the probability of a woman's right to be delivered is much lower in Turkey. It's not possible, you know, a man... how many times have I lived through it. You will be a consultant to the same company. Once you learn, there is the consultancy fee offered to you, and there is the consultancy fee offered to the man. You see, you've been given water; it's 50% more... Happened to me last year. I said, how much do you pay that teacher? he said A number, I said how much will you give me B number... I said OK, why is the A number 50% more than the other one? They said, "Family man," they said, "he supports his family". (Interview 11)*

According to a collaborative study by the ILO Turkey Office and TURKSTAT, the wage gap between men and women in Turkey is 15.6 percent in 2020 ("News: Gender Wage Gap", 2020). One participant was faced with payment inequality and described what she experienced as follows:

*I got the appreciation of the general manager. Of course, this appreciation was always so-called. It did not happen in writing; they made me very sad in writing... I was not given my rights, excuses were always put forward, but on the other hand, they always emphasized how successful I was... (Interview 1)*

Another participant mentioned that even if one woman gets promoted, wage decision is also up to the manager's decision which enables wage inequalities. This occurs, again, due to subjectivity which is mentioned in the promotion inequality section.

*It's entirely up to your manager's discretion. You are presenting the success of a project I did to a board outside the department. After completing the year, the manager's approval is required. Here, an objective evaluation is no longer a plus and whatever the manager says becomes true. Your level is chosen by him, and then your salary level at the next level becomes clear. (Interview 5)*

To sum up, it is known that women are paid less than males because it is assumed that women are dependent on men, and men are the primary breadwinners; thus, they should be compensated more (Kocak, 1999). In terms of aerospace studies, there is a wage gap between women and men due to gender discrimination.

#### **4.2.4 Attitude Inequalities**

In our society, the feeling that there is someone constantly watching and judging us is real. Hence, nearly all people perform accordingly with defined roles in terms of social and religion. If one is not portraying the correct gender roles, she/he knows that there are people who are looking at and judging. This also makes it possible to not feel safe since there is a possibility of being rejected, assaulted and so on. This constantly being watched feelings is enormously similar to the panopticon concept. The panopticon is a simple architectural design that enables one to see and constantly control and can be used for various purposes and conclude in different ways. In terms of gender discrimination, Wright says that “Panoptic mechanism abducting the idea of masculine power as dominant over femininity and fixing it into society so subtly that people rarely notice or have the ability to protest it” (Wright, 2018). We can say that men are at the center of the system as the controlling tower in the panopticon, and women are placed at the edges of the circle of the system in a similar way with the cells in the panopticon, the periphery of the panopticon. Men are gazing at women and women are stared at as subjected. Women know that men are watching, controlling and have power over themselves. In this case, one of the participants indicated that:

*... so, you always feel a neighborhood pressure inside. Your behavior, your movement, your dress... I mean, I don't know, even when I'm going*

*to attend a meeting, they (her managers) make me stop and let another person go, a man... to show everyone his power. (Interview 1)*

Furthermore, “A woman must continually watch herself” belief is also valid for women too. Foucault believes that panopticon system creates strong patriarchy in which women are also subject to themselves (Bartky, 2020). However, if one woman does not think like this and refuses to men's control and men's surveillance over her, she is seen as a threat and criminal who put the patriarchal system in danger. One interviewee mentioned her observation in this case as:

*really, women can be against women sometimes... A female manager can get along better with men and ... treat them differently. Sometimes, women favor men more. I don't think there is such a thing as men like women too much. I definitely think that women are in the background, by the way, my friends also think the same, we talk about this as well... (Interview 4)*

There is a belief that women cannot complete a job and fulfill the responsibilities which are the same intensity level of a job that is given to men. Expectation from women about overcoming intense responsibility is lower than what is expected from men. One of the interviewees explained her thought about this issue as:

*In general, he showed an approach to women as “women cannot do it”. Even if a job will be given to women, the intensity of that job is less than the intensity of work given to men... I don't know. There are some attitudes towards women such as “You cannot do it anyway” or “you will have problems and then have serious problems.” (Interview 8)*

Another participant mentioned inequalities in attitudes as follows:

*For example, we are on a board. After that, a man proposed a woman to board. And the other one said, “how do you know her?” right away... “what's the idea?” ... between each other immediately. I said, “I'm here, I'm here!” ... “You don't count,” said one of them. (Interview 11)*

On the other hand, there are some men who do not want to shake hands with women since they believe it is the more appropriate thing to do in accordance way with social norms and ethical defined behaviors. However, it is another way of discrimination since they embodied women's sexuality. It is seen as a disrespectful attitude by women since shaking hands signifies mutual respect in

business and traditional social customs ("Handshake Symbolism – What Does It Mean?", n.d.). Even in some cases, the type of shaking hands is seen as the usage of body language to show leadership skills and characteristics ("Effective Handshakes in the Workplace: a Leader's Guide", n.d.). By not shaking women's hands, men are also taking away the opportunity of women to express themselves. One participant indicated that:

*... on the customer's side or the sub-contractor's side, try to look away from the woman, not to shake hands (Interview 2)*

It is obvious that women experienced different attitudes in the aerospace field just because they are females.

#### **4.2.5 Inequalities in Terms of Supporting**

In terms of gender discrimination, supporting women's ideas and efforts and standing behind them are also challenges those women have faced in the workplace. In terms of supporting women to haul, evolve and achieve more success, one of the participants mentioned what she heard from men in the workplace as:

*"Why would a woman come to a place", "Are there no men left, we will bring a woman somewhere", you know, is there no such thing, "Doesn't he have a man? If there is a man, let's take him between us" and so on. (Interview 11)*

In terms of supporting women's ideas, one of the interviewees indicated that she wanted to improve one process by designing a new system which would increase efficiency in the workplace. However, her managers did not support her idea. She managed to finish this system and implement it as a result of her endeavor and express her feelings about this experience as follows:

*... my manager didn't stand behind me on this... (Interview 1)*

In academic places, women are also not supported as much as men. One participant indicated that:

*At the meeting of the Turkish Academy of Sciences, there was a woman's proposal to the Academy Board, and here are 6 people to be elected to*

*the Academic Board, and there is one female candidate. There are already 6 seats, but one of our instructors got up to recommend that woman and said, "especially," he said, "We think it is very important to elect a woman to the council. When we have meetings abroad, they always ask that why there is not any women in our board." I mean, if there is no pressure from abroad, a woman will not be elected to that council. (Interview 11)*

From this experience, it is clear that the reason for supporting that woman is to terminate all the questions of other nations' academic boards, not for believing that she can be a good member of the board or any other thing. She is a candidate; she seems acceptable due to pressure from abroad. I believe that this is a different type of discrimination, she is thought of only for her sex, not her personality, achievements, experiences. It is some kind of ignoring her selfness, only seeing her body.

It is clear that supporting women in terms of achieving their goals, putting their ideas into practice and riding high is also one type of discrimination and we can see faced issues in aerospace studies.

#### **4.2.6 Gendered Expectations**

It is acknowledged that women's roles and men's roles are defined and society expects women and men to act in accordance way with these roles. If one does not act accordingly, society discountenances and that person becomes excluded, someone who is seen as a threat for social order, etc. In this case, women are exposed to discrimination if they do not play by rules.

The first thing about the women's gender roles is about where women belong. Women's place is home; their roles are domestic. Within these boundaries, one expectation from women is getting married and having children. These duties are seen as the primary occupation of women. If they overstep these marks and go out of house, society begins to question whether she is completing or completed domestic duties. In this respect, one participant indicated that:

*Even if you don't get married in Turkey, even if you go to space, it is felt as a deficiency even if it is not said. I mean, just in case... but there is one thing. You are also a woman. I don't know if you are married, but...*

*in some cases, marriage comes to the fore on a subject that has nothing to do with marriage (Interview 12)*

Another participant explained her experiences as follows:

*Of course, my private life is directly interfered with; there is constant interference. "Are you married?" "Why not?" I don't know... "Time is passing, if you think of children now you need to get married, hurry up" oho... Amply... "Why don't you think about having children?" "You are aging out too, just think about it" (Interview 11)*

Moreover, it is believed that there are some appropriate jobs for women where they will be more suitable. For example, being a teacher is the most suitable one. It is similar to raising a child, which is also related to the domestic responsibilities of women, having children and raising them in an accordance way with society's norms. Additionally, the working hours of teachers are defined and it is useful for women to be at home at the same time and then fulfill her domestic responsibilities and be home before the evening. In this case, being an academician and scientist is not seen as any different than being a teacher. Society expects women to become a teacher, and the woman who became an academician is accepted by society. One of the participants indicated that:

*Giving a lecture seems to be an acceptable thing for a woman, as her teaching profession is seen as a continuation. There is no problem with it. but there are serious problems when it comes to research (Interview 11)*

Another role of the women is being neat, pure and organizing. Being impassive and dispersed is men's roles. If one woman is completing her duties and doing her job by being neat, organizing, it is believed that she was able to do all these because she is a woman. Actually, it is about their personality, sense of mission and modus operandi of her, not her sex. One participant who worked with all-male team explained that:

*... with your arrival, we really came to an order in our affairs. We work so ridiculously, we don't remember anything, you are our corporate memory, you take notes on everything, everything is too neat, we can find everything when we go to a folder, at least you brought us some discipline. Thanks to you, we have been working regularly, so we are very pleased. That's why they said, "we want to get a girl to our team if she is like you" (Interview 6)*

Furthermore, it is believed that men achieve success, and women are the ones who support them and stand by them in the way of achieving success. The work given to men is different than the work given to women since there is not any expectation from women to achieve bigger successes. One participant explained her opinions about this gendered way of thinking as:

*I think that the expectations are a little lower in units with more female employees. Because here again, I can start from my own work environment. When I look at the female managers I know and have had the opportunity to work with ... it seems to me that the expectation is a little lower due to the demanded work. (Interview 6)*

It can be said that women face discrimination about expectations due to defined gender roles that exists in aerospace studies.

#### **4.2.7 Struggling due to Maternity Leave and After**

In 2016, the rights associated with childbirth and adoptions, as outlined in Labor Law No. 4857, underwent significant adjustments, with new forms of rights and leaves ("Maternity Leave in Turkey", 2016). Likewise, it is indicated by one participant as:

*Although it is tried to be corrected a little more, I think it is less. At work, the opportunities provided to women with children have only recently been trying to be increased for 4-5 years. There is an effort to give child support. But we still live with covid today, the woman has a small child, the female employee, but women are not allowed or allowed reluctantly. You are already observing this. (Interview 6)*

If the mother desires, she can take up to six months of unpaid leave after the expiration of paid one ("Maternity Leave in Turkey", 2016). However, it is experienced that one participant was not permitted to take that leave and it is wanted from her to start working after paid leave. Of course, it is up to her, nevertheless putting such pressure on women can be considered as inequality since it is her given right. One of the interviewees expressed her experience twenty years ago as:

*Ok, you're pregnant, it's going to be a baby, but she marked the date on the calendar and said, "you have to start your duty today," he said, "this work can't be done tomorrow," he said, "Make it 6 months old, you have*

*the right to breastfeed, but you have to start your duty," ... I made my 6-month-old baby ... Of course, I had to give it to the babysitter and find someone to baby-sit, who will want and love my baby at least as much as I did. (Interview 6)*

Female employees will be permitted to take a total of one and a half hours of nursing leave to feed their children under the age of one. The employee must pick when and how she will take this leave, as well as how many times she will take it. The amount of time spent on nursing leave will be counted as part of everyday working time ("4857 Labor Law English by Article", 2006). However, some women experience difficulties with nursing leave. One participant witnessed that:

*There used to be managers who weren't allowed to go to breastfeed their children. (Interview 6)*

Due to maternity leave, it is believed that women did not even get promoted. One interviewee expressed her thoughts as:

*I think that the administrators in some units may say that this woman can go on maternity leave or she will leave, let me fill her level with someone else. (Interview 5)*

Another participant mentioned the same issue as:

*I hear things like, due to going maternity leave at the point of being Chief, someone else had her position to be Chief. (Interview 3)*

For some companies, women are provided with lactation rooms which enable them to take their breast-milk, put it aside and take it home in order to be able to provide their newborn baby with breast-milk when they are at the workplace. However, for some buildings, there is not a lactation room. It is questioned whether there is not such room since it is assumed to be all-male working area or not. One participant who works in male-dominated directorship mentioned that:

*You know, there are breastfeeding rooms, we didn't have them in our building. They probably may not have thought of such a thing. But when we say it, they took it normally; after all, everyone has a spouse or a child. (Interview 3)*



### 4.3 Discrimination by Co-workers

One of the biggest outputs of qualitative analysis about women's discrimination is that women are experiencing almost the same level of discrimination by co-workers which they exposed by executives. The types of discriminations women are subjected to will be discussed in this section.

#### 4.3.1 Slighting

In the workplace, it is obvious that women are taken less seriously than man and it is called as The Authority Gap (Merritt, 2021). It can be acknowledged that women are not respected if they are not self-confident. People are not going to take women seriously. However, when the women start to be confident, they become unendeared. There is a fine line between these two situations and it is really difficult for women to balance (King, 2021). In this respect, one participant implied that:

*I mean, there is something about not listening to women, no matter how highly educated they are. I think because we are a patriarchal society... I know they don't listen to me but listen to another man. (Interview 4)*

To be taken seriously, if women show stereotypical masculine characteristic features confidently, assertively, by taking control, it makes others disturbed since they see it as revolting against defined classic gender standards for behaving. When women act in these ways, they are generally seen in a negative manner by being aggressive, peremptory and nerve-racking. As a result, women face with lack of confidence and limitation of opportunities to guide (King, 2021). In this respect, one of the participants indicated that:

*... when a man responds, it's a "reaction", when a woman reacts, it's a "trip". It really is... you always pay attention, so that they don't perceive it as a trip, whatever sentences I say, which word I choose, which sentence I use, the person in front of me will be less startled. (Interview 12)*

In a similar way, another interviewee expressed that:

*I mean, I don't know if it's because of the environment I work in, but it may be a general perception. I don't know how to say it. It's normal if a*

*man gets angry, but if a woman gets angry, there are different reasons. (Interview 3)*

Again, even if women again accomplish and achieve remarkable successes, they are not taken seriously and seen to be congratulated due to authority gap. One of the interviewees indicated her experiences about not taking into consideration as:

*I've seen these a lot, despising... I went through these... In fact, when I said something to someone, he was an executive and, when I said that I did my doctorate from a METU machine, he said to me that "in our time, there were no things with dyed nails and dyed hairs". I've come across things like this... (Interview 2)*

To conclude, it is clear that women are underestimated, and men hold women in low regard. Among co-workers, women are taken less seriously than men and this situation occurs in aerospace field too.

#### **4.3.2 Pronouns**

One of the authority gaps is about pronouns of address. How to call a woman and man changes the way of attitudes towards them. Firstly, calling co-workers as "brother" or "sister" in the workplace totally changes the level of respect. Generally, women do not want to be called as "sister" in the workplace; they choose to be called either "mistress", in Turkish "hanım", or by their name only. If they let someone call them by using their name without any pronouns, the level of respect decreases automatically as one of the participants explained her case as follows:

*For example, I think there is a difference between calling a person brother and sister. In other words, if a person of the same age calls someone "brother", it is different for him to call the other "sister". I don't prefer it, I say "you can call me by my name", but when they call us by our name, I think they definitely behave differently when they don't put that brother thing or sister thing. They act a little more like we are friends, no matter how much distance is tried to be put. (Interview 4)*

Another participant defined her opinions about this issue as:

*You can call the man a brother, after a while, the person who is your leader or the person who is your manager, and suddenly that person*

*turns into something more sincere after he attains the status of the elder brother. However, you cannot call someone older than you at the manager level or the manager level. Sister is a bit risky. Either mistress or the name. I think that when we involuntarily call someone a lady, the level of status and prestige is a little different. (Interview 6)*

In the academic field, these pronouns turn into “gownsmen” and “mistress”. People call women academicians as “mistress”, in Turkish “Hanım”, while calling men academicians as “gownsmen”, in Turkish “Hoca”, and this creates an enormous gender discrimination and disrespectful attitude towards women academicians. One of the participants indicated that:

*... They do this on purpose, and they do that too. For example, in many meetings, if all the teachers are male, they call them "Hoca", as for me, "Hanım".... (Interview 11)*

Another participant mentioned this issue as well as follows:

*For example, there are 2 teachers in the same position. A woman is a man. The male teacher is called “hoja”, the female teacher is “Hanım”. This is happening, so there are places where this is not done with malicious intent. (Interview 12)*

Preferences of how to call one person by depending on their sex and, by doing that, changing the way of behaviors according to and respect level result in a huge gender discrimination that women face both in working and academic lives.

### **4.3.3 Protection**

In society, there is a general belief that women need to be protected by men and under the wings of men since it is expected that women are fragile, weak and needy as gender role. Even in the workplace, it seems necessary to protect women if there is something to discuss and procure acceptance as if women are not capable of defending themselves. In this respect, one of the participants indicated her experience as:

*This just happened the other day which actually a friend from another team is having an argument with a friend on my team over a business issue. He's coming to talk about something and there's a woman friend next to him who owns the real issue. The boyfriend she went with has to*

*go. He just said, "I can't leave this friend here alone, we came together, let's go back together," he said. I found it very strange. I had the opportunity to give feedback the other day. "This bothered me so much, why shouldn't she be alone? I mean, I'm coming to your team alone, shouldn't I come, or my female friend in my team is coming, shouldn't she come?" He replied as "No, I mean we came there together. After all, I treat my mother like this, I treat my wife like that", You know, I said "what does it mean?". He said "Because she's a woman" or something. (Interview 3)*

Moreover, as a result of the observation that I have done, I experienced the gender inequality in a way that women need to be protected and warned not to harm themselves.

I did the observation for two days. There were nearly twenty people and three of them were women as guests, one of them was me. Some of them were working as controllers, some of them were team members and nearly ten of them were guests. The place was an open field and five white containers were there. Three of them were for computers and others for equipment. Two people from the controlling containers explained what was going on and what their aim was to be there. However, controllers always warned me to not walk over the cables and four different controllers warned me to not walk in front of the optic eyes of two big machines. The first two of them did not explain to me why, they just warned me and turned back to the container. It caught my attention that nobody warned the other male guests. I felt odd to be warned about same thing repeatedly and, they were talking slowly and distinctly like I was from another planet. These two big machines were similar to Daleks' or R2D2's heads with an optic eye. It was funny to imagine them with all the funny noises they made. Moreover, the elder controller warned young controllers to take care of me in order to not get close to the three controlling containers. I felt like two years old but tried to understand his purpose. However, this does not change the fact that he believed that I needed male supervision since he believed I would not understand the technical importance of the equipment.

From the interviews and observation study, it is more apparent that men think women need their protection and power to be safe. This is another way of discrimination against women by seeing them to be guided.

#### 4.3.4 Exclusion

To advance in an organization, establishing a good social network is enormously vital in most industries, especially male-dominated ones such as aerospace. Nevertheless, it can be a real problem in male dominated workplaces due to the fact that women are generally excluded from the social network which is actually established among men (Cole, 2019). One of the participants who worked with all-male environment indicated that there were times men excluded her from business processes and prevented her from doing her job as follows:

*They have such a tendency to remove them from their mailing list if they can find the opportunity, ignore them, and turn to someone else while you are there. (Interview 4)*

Sometimes, exclusion from business processes happens by not explaining the job in a proper way, not indicating tasks and deadlines in a detailed way and leaving it to the person to understand and fulfill the responsibility. One participant who worked with all-male team indicated that:

*Working with such a team requires a little more sense of personal responsibility. Maybe someone who is not in such a place can't hold on, they are excluded involuntarily because that is a psychological exclusion. (Interview 6)*

Another participant experienced social exclusion in a way that men preferred to give a reason by joking around as follows:

*Let's say when I was the only woman, if there were ten men, they wouldn't take me to dinner together. they were jokingly saying that there is no room in the car (Interview 1)*

Exclusion from work-related processes at work and social exclusion are different forms of gender discrimination and it is seen in aerospace studies.

#### 4.4 Personal Lives

It is well known that aerospace studies in Turkey are in the rapid climb phase and it is required to work so many hours to fulfill the tasks and achieve the goals step by step. Likewise, the interviewees indicated that they have an intense

tempo and tight calendar. As women, they need to balance their personal lives; however, it is not easy when domestic responsibilities are considered since it is assumed as women’s responsibility as another gender role.

#### 4.4.1 Work-Life Balance

I asked to the interviewees whether the work-life or personal life has the predominancy for them. They answered as in Table 4.3.

**Table 4. 4:** Work or Personal Life is Predominant

Predominancy	Cases
Personal life	4
Changing of priorities	3
Work	2
School	1

As a result of this study, it is my definitive judgment that in aerospace studies, women have a great deal of trouble in order to achieve more success and the works, accomplishments and studies they have doing have great importance for them. One participant expressed that:

*There are many people who are sleep deprived, there are many people who do not see their family. (Interview 12)*

However, everyone needs to make a break in intense work pressure to be able to take a breath. While I was talking with the interviewees about how they balanced their work-life balance, one participant indicated that:

*For many years, I worked at the expense of everything, so ummm, I worked at the expense of my health, but in recent years, I realized that I had to balance all of them with a little mental development effort. (Interview 2)*

Another interviewee explained her opinion as follows:

*In the past, I used to work a little more overtime; frankly, I guess that was the necessity of some work, but I've looked for a while, there is no end to it. That's why I cut it at some point, okay, if I don't have enough energy, I can do this much. Here, too, I work overtime when it's really necessary or when I have time, but I can't do it otherwise, so I'm human too. (Interview 4)*

By changing of priorities, participants focus on what is essential and urgent in that specific time and act in an accordance way with it. It is not seen that there is any pressure from superiors or any discrimination against women to prioritize work over their personal lives. They choose to do it willingly.

#### **4.4.2 Domestic Responsibilities**

In terms of gender roles in Turkey, women are defined as an unpaid worker or low paid worker or so suitable for caring and household. Society expects women to be obedient, servient, and good mother who takes care of their children to make their source of pride for their father. Also, it is believed that even women work, since they gain less money, they should be able to complete jobs of the house (Dominguez-Folgueras, 2015). I asked to participants that who is responsible for domestic duties, and their answers can be seen in Table 4.4.

**Table 4. 5:** Classification of Domestic Responsibilities

<b>Domestic Responsibility</b>	<b>Number of Interviewees</b>
Help from husband	3
Equal Division of Labor	1
Help from housemaid	3
Women's Responsibility	1
Help from family	1

According to social structural theory, people develop the behaviors which fit the roles which they occupy with time due to sociocultural pressure or biological

potentials and etc. (Goldberg et al., 2012). In this case, sometimes women acknowledge that domestic responsibilities are their duties without even questioning it. One of the participants, who actually experienced gender discrimination at the workplace and disagreed it, indicated that domestic responsibility is her duty inevitably as follows:

*Organizational work at home is mine, of course, there is nothing to do, what to buy, what to cook, etc. (Interview 2)*

For this mindset, women believe that if their husbands take some responsibility and fulfill some domestic duties, they are helping their wives. In this respect, another participant indicated that:

*My husband is trying to be helpful (Interview 5)*

The participant sees her husband as not totally helpful; she believes that he is trying to be helpful; again, this shows that domestic duties are not for men, and they are not meant to complete these responsibilities easily. Another interviewee mentioned the same thing as:

*My husband has been very supportive (Interview 1)*

In Turkey, it is argued that women are not essentially responsible for subsistence of the household; instead, they are responsible for providing the household circumstantial needs such as cooking, cleaning, taking care of the children, making their husband happy and etc. (Palaz, 2002). That is why it is believed that women are not necessarily working, they can leave their job if domestic responsibilities call for duty.

On the contrary, there are some women and men who do not agree with these gender roles and accept domestic responsibilities should be both of their jobs. One of the participants expressed her and her husband's mindset as:

*Housework is nobody's responsibility, and nobody helps anybody just because they did something. We are trying to settle this perception a little bit. (Interview 6)*



#### 4.5 Discrimination in Academy and Studies

So far, I discussed gender discrimination in workplace. It exists in the university environment as well. Women's rate is very low in the educational field.

One of the participants who studies aerospace engineering indicated that there are too few women in the classroom. Sometimes, she faced gender discrimination by her male teachers and she gave an example as follows:

*For example, we had teachers who kept the girls in the background... calling the class "gentlemen!" ... (Interview 8)*

By doing this, her male teachers discriminating women by neglecting them and not even caring about their existence in the classroom. I think that saluting people in accordance with the procedure can be also related to showing respect to people and only saluting male students is disrespectful attitude towards female students.

Furthermore, classmates are also discriminating by neglecting women and acting like they own the classroom, that is the place where they rule. In this case, the same participant indicated that:

*The girls are so few that they (men) forget that they have a girl with them and they talk completely slang as if they are completely male, but "hey, I'm here too", it suddenly comes to mind, they say, "oh, you were there too". (Interview 8)*

Another participant who received her undergraduate degree in mechanical engineering and then completed her master's degree in industrial engineering experienced a similar case as well. She indicated that the environment of mechanical engineering and industrial engineering are very different than each other in terms of women rate. For undergraduate years, she was faced with a gender discriminated environment where male-dominated conversation took place regularly and it became normal daily thing unwittingly. She indicated that:

*I swear I am very surprised that there is such a large number of women in the class. Because when we were an undergraduate, if there was a derby, the first 10-15 minutes were such an environment where derby talk was made. (Interview 3)*

One of the interviewees, who is an academician, indicated that she did not think that there exists gender discrimination among academicians since being an academician is accepted by society as a continuation of being a teacher as it is discussed in the no discrimination section. However, it is indicated by her that there exist gender inequalities in terms of supporting women's ideas, projects and funding them in the way of researching. In fact, she also tried to find the numbers about the difference between supported women and men researches and, how many of them were rejected. It is mentioned that:

*I couldn't get the numbers out, but everyone knows that women have a higher rejection rate in research funds. (Interview 11)*

Furthermore, since it is acknowledged that the rejection rate of women is more than men, women started to find a way of solving this problem; their goal was focusing on that research and achieving the results. In the end, they started to propose their research project with the name of their men academician collaborator as a project executive. By doing these, they tried to eliminate gendered evaluation. In this case, academician participant indicated that:

*Now, after a while, you hear so much about whose project was accepted and whose project was rejected. you see, we all become the jury... there is even something in the community. I'm doing the same now, you know, because I'm fed up now. Project executive... that is, the idea comes from the woman, she says, "If I am the executive, the probability of being rejected is higher, so let a man be an executive, and I'll be a researcher..." A friend of mine did it, he was the executive, it was rejected. Then they gave the same project almost the same, gave it to a friend, and he became a researcher himself. this was accepted... I know four women... (Interview 11)*

It is a sad thing to see how important academic research and projects that will contribute our country and society are not funded and supported due to gendered mindset and discrimination. In this respect, one participant expressed her thoughts as:

*At some point, you used to get depressed, you seemed to collapse even more. Now, for example, as the years go by, something like this is happening now, it is the vision of the other person, so there is nothing you can do, you cannot change it and you start not to perceive it personally. (Interview 12)*

Gendered expectations from women also exist in academic life. The academician participant explained that they are doing lots of joint projects and work closely with so many partners such as universities, companies and so on. It is mentioned that “getting married is the first goal of women” norm causes the gender discrimination in academic partnerships as well. The participant explained her experience as follows:

*I'm going to talk business, that is, to the ministry. After that, they keep saying, "Oh Teacher, you are also a woman. Why didn't you get married" "Isn't it hard to work this hard as a woman" that "if you work that hard, of course, you can't get married"(Interview 11)*

Another interviewee who takes participation in academic partnerships and projects expressed her feeling towards getting gendered comments and facing discrimination as follows:

*It is bad for the country because a comment you made selfishly and unconsciously, by commenting on someone who has made such an important contribution and served in your country, you actually take that person's time, his very valuable time... or that time is more valuable for the country. While she could be used for very useful purposes, she gets stuck with it because of your comment. Human because he is. This approach is in fact, harming the country again, in other words, a very selfish or wrongly made a comment is to the detriment of the country again... (Interview 12)*

Moreover, it is found that gender discrimination in educational life exists worldwide; in fact, it is way worse than in Turkey. While one participant was saying about gender discrimination as:

*We are in METU, so there is no such distinction. (Interview 12)*

Other participants who completed her master's degree in physics abroad in America indicated her experiences with her teachers in the late 90s as:

*"What are you going to do," he said, "you will stay on night shifts," he said, "then your hormones will break down, then your inspiration will blame you for why we can't have children." So, for him, leave physics before it is too late, find a job where I won't stay on the night shift...". "You are wasting our time" "You will get married one day, you will have children, you will leave physics, what does it matter, I will not train you" ... So, you can file a lawsuit right now. They can't do it in 2021, but*

*in 1997-1998, it was highly normalized and this culture was very normalized if you can live in it, live in it, if you can't, go away. The feeling that you have no place here anyway. (Interview 11)*

She witnessed such awful gender discrimination that women are not believed and assumed as driveller due to mental illnesses. She explained her experience as:

*A friend of mine was in the aerospace department, he was sexually harassed by a teacher and they treated her as crazy and took her to a mental hospital. In other words, "you are lying", "you are slandering this teacher", I don't know why, even if you talk, it was viewed as something that slandered and slandered to improve your grades. (Interview 11)*

She was one of the students of Walter Lewin, who was accused of sexual harassment in 2013 (Hess, 2015). She explained her and her friends' experiences about him as follows:

*The Walter Lewin case, for example... He bullied and sexually harassed a lot of girls. In fact, the incident came from a high school student, and they are seen by the parents in the chatroom they wrote to the high school student. After that, when this came out, many people say that I was exposed to the same thing, I was also exposed to the same thing. I mean, we all knew that in 1997, this was an accepted thing, "don't go into Walter Lewin's room", but he couldn't do anything... everybody knew, all upper-class female students would tell lower-class students to stay away from Walter Lewin, don't go into his office alone, leave the door open if you do. By the way, there were a few other teachers like this, not just Walter Lewin, who liked to touch, tease, and sexually abuse female students. (Interview 11)*

For our country, in the reconditeness of the aerospace field, scientific researches are significant in order to develop and achieve successes step by step. There are so many things to do, to search, to study, and to try. There are trials and errors, projects to produce what is not produced yet or try what is different so far and, studies to discover the unknown. Sadly, there exists gender discrimination that causes gearing down of educational improvement and, the speed of putting into practice of projects, ideas and researches.

#### 4.6 No Experiences of Discrimination

Some of the participants indicated that they did not experience discrimination themselves in the workplace or in the education environment, only witnessed or heard about some inequalities or true stories from different people. It was evocative for me since the women who experience discrimination have the majority. After the qualitative analysis, it became clear that there are some reasons for that. Firstly, women act like a man and develop masculine behaviors as a defense mechanism or to increase their adaptability into male-dominated environment. One of the participants called herself manlike as a self-categorization and expressed her opinion as:

*I've never felt anything like that, "you're a woman", "you can't do it", or anything, especially when I worked as an engineer in mechatronics, I went in and out of all kinds of workshops, and nobody told me not to do this. It's also partly due to my temperament. I'm a bit of a calm person, I'm like that, I'm a bit like a man. It's probably because of that, but no one said anything to me, I mean, "what's wrong with you?" ... (Interview 2)*

Moreover, women are faced with male-domination in so many places and it becomes something that women are accustomed to. That is why they gradually become assimilated unwittingly. Male-dominated environments, masculine attitudes and general features of these kinds of places become normal for these women; they start to not find them odd. One participant indicated that:

*I swear, because we got used to it so much, there is nothing that I find strange, as you mentioned, I do not find it strange because I have always been in such an environment since the beginning of university. In fact, being in very crowded girls' environments started to feel more tiring to me. After all, the character of the men was more ungentle in style. Well, after getting used to speaking so clearly, it became different for me... (Interview 3)*

Another interviewee explained her thoughts about always being male-dominated environment as:

*But it doesn't happen when it doesn't, what should we do, now I can't distinguish much. I mean, I'm always in such environments, so I can't imagine what it would be like if women were in the majority. (Interview 8)*

Furthermore, in the university environment, among the academicians, men have the majority. In these situations, women again try to assimilate and maintain a low profile in order to not be discriminated and faced with challenges due to their sex. One participant mentioned her teachers in master's degree as follows:

*They were people who tried to make them feel like women and displayed masculine attitudes as much as possible. (Interview 11)*

Consequently, gender discrimination exists in so many areas, not being exposed to discrimination is something that can be rarely seen, especially in Turkey. Shifting the way of behavior into a more masculine way and floating with the stream by being assimilated is another type of result of discrimination, I believe.

#### **4.7 Positive Discrimination**

So far, the types of gender discrimination that have negative impacts on women are handled. On the other side, positive discrimination is another version of discrimination that favors someone by addressing them as different in a positive way. It can be said that women experience positive discrimination, and even sometimes, they expect to be treated differently. In this study, it is confronted as well. One of the interviewees indicated about their male teacher in male-dominated classroom as:

*They're paternalistic, we're less people so it's more like possessiveness ... they may want to help make us feel that we are not alone. I have never seen such discrimination from teachers, I have even had teachers who wanted to help girls more. (Interview 8)*

This experience can be called as positive discrimination; however, I consider that it is also coming from the defined gender expectations such as women need help from men, women need to be protected by men, not be left alone.

In terms of working environment, one participant indicated that women act so fragile and expect to be treated differently as follows:

*And women shouldn't be so puny ... I mean, "aww he said that to me at the meeting", "he did that...", "aww! he shouldn't ..." I am against that too (Interview 2)*

Some women expect positive discrimination and do not accept overtime working or intense tasks by showing domestic responsibilities as reasons. This is tangled I think since women face discrimination and accept that they are responsible for household duties and also, they are the ones waiting for positive discrimination. In this case, another participant indicated that:

*I have a child, I am a woman, when they say no, some favors can be provided to them. (Interview 7)*

In some cases, women do not want to be treated differently than men; men or women treat other women as they are privileged. One of the participants mentioned her experience as:

*In the workplace, they made me feel more privileged because I was a woman during the application process. (Interview 5)*

As it is discussed before, inequalities in terms of supporting women is one type of gender discrimination. In a similar way, they are supporting women more than men is discrimination as well, positive one. It is encountered that men who have daughters are more likely to understand women's struggles and how important that they should be treated equally. As a result, they ended up discriminating against women in a positive way empathically. One of the interviewees indicated that:

*In other words, there are those in the bureaucracy who say, "Let our girls go the same way you did". they mostly always talk about their own daughters. Men who always have daughters especially look at the situation in the country, it's bad. "What will my daughter do in this environment", they say, "it's important for you to survive". (Interview 11)*

It is clear that in aerospace studies, there exists positive discrimination that favors women. Also, there are some women in that field who expects to be treated differently even they mainly experience a negative one.

#### **4.8 Being Lucky and Thankful**

It is not an exaggeration to say that, experiencing gender discrimination or hearing true stories about discriminated women are normalized and seen as

daily things, inevitable things. Correlatively, people who act in an accordance way with defined gender roles are seen normal as our society and norms tell them to be. Running into someone, who does not play gender roles and does not agree on gendered frame of mind, is seen as extraordinary.

During this study, I encountered another frame of mind. Thanks to these extraordinary people, if one woman does not experience gender discrimination and never feels like other people expect her to act in an accordance way with gender roles, she counts herself as “lucky” and returns thanks by saying, “hallelujah”. In this study, five different interviewees used these words: four participants said “I am lucky” or “luckily” nine times and again, four participants said “hallelujah” five times.

For example, one of the participants, whose family members do not put pressure on her to get married even her age is assumed as late to get married by the society, expressed her thoughts as:

*For example, I am 34 years old. I am not married. There is no pressure from my family, thank goodness. (Interview 12)*

In a similar way, another participant assumed herself as lucky since her husband thinks that domestic responsibilities are both his and her responsibilities. She indicated that:

*Fortunately, my husband is a person with whom we can take certain psychological inputs together, read, understand and apply the right thing together, so I am really lucky in this regard. (Interview 6)*

Some of the participants returned thanks or considered her selves as lucky due to not experiencing so much discrimination, or experiencing discrimination less than other women. In this respect, one participant returned thanks for not experiencing big discrimination as follows:

*Thank goodness it wasn't something I was exposed to directly, so since I can't remember it, it means it wasn't big enough to remember (Interview 12)*

Similarly, other interviewee returned thanks for not handling all household duties by herself as:



*If we say the division of labor, thank goodness there is a boarding woman at home, we have a caregiver. (Interview 2)*

Furthermore, one of the interviewees was grateful for being not discriminated against by their managers or employees since she knew that there were other women in her workplace who faced with discrimination. She expressed that:

*Thank goodness... Some friends may encounter such problems, but neither my manager and director with whom I work, nor my manager and director at the place where I will switch to were not such people. they really understood the point I came from, saw my needs... Those were really the people on both sides who could guide me more accurately. (Interview 6)*

Another participant believed that she was lucky since she had another female co-worker in her team. I believe that this is grievously points out the fact that there exists male dominancy in aerospace studies and there are very few women or no women in some teams, directorships. She mentioned as:

*I swear I'm lucky I have a female friend in my team (Interview 3)*

In a similar way, another participant indicated that she is lucky since she works with female team members and her leader is extraordinary since she tries to prevent discrimination in the workplace. It is clear that the participant assumed herself lucky since she acknowledged that gender discrimination is so common. She explained the situation as follows:

*I also have female engineer friends working in the lab. They are actively working with their teammates in the lab, but as I said, our project leader is a woman. But since she will not allow any discrimination, there has not been any negative situation at the moment, so we do not have any. We are more... a separate country. We are lucky compared to Turkey's average; I can't lie. (Interview 12)*

In an accordance way, another participant indicated that she is lucky since the other manager and her superiors did not discriminate against women in terms of hiring inequalities and attitudes towards them. She expressed this situation as follows:

*... but I say on behalf of myself and my environment, I have never encountered such a thing. You know, no one said anything, don't hire a*

*lady, she couldn't do the job or something, everyone here is an individual. I think I'm lucky here. (Interview 7)*

One scientist participant indicated that she is thankful since she encounters positive attitudes and has female team members as follows:

*I have also received very positive comments. No one abroad gets such positive feedback. I just click my ear to such strange comments about my womanhood and try to move on. Thank God, the number of men and women in my own group is half at the moment. I have female engineers; I also have graduate and doctorate students. (Interview 11)*

I think all these bring Turkey's terrible situation of gender discrimination to light. In aerospace studies, women assume they are lucky or thankful even if they experience discrimination a little less than other women or they have one or more women in their workplace. While the world is talking about gender equality and how to reach it, designing policies and supportive events to raise awareness, it is sad to see that what are we thankful for.

## CHAPTER 5

### DISCUSSION

In the literature review part, I explained that there exists gender discrimination in aerospace studies and participation level of women is lower than men. Types of gender discriminations in workplace or academy are related with hiring, firing, promoting, accepting into social network, income level and so on ("Gender Discrimination in the Workplace | Bohm Law Group Employment Lawyers", n.d.). In a similar way, as I explained in detail in Chapter 4, there exist different types of gender-related discrimination in aerospace field both in working life and education life. In Table 5.1, the types of gender-related discrimination that I found from the qualitative analyses are given with the performer of these discrimination. In this respect, my results support what I found from literature, there exists gender discrimination in aerospace field similarly with the other STEM fields. I can answer my research question that women's participation in aerospace studies are lower than men and they face with several gender-based disparities and challenges.

**Table 5. 1:** Performer of Discriminations by the Types of Gender Discrimination

<b>Type of Discrimination</b>	<b>Performer of Discrimination</b>
Glass Ceiling	Employers and Executives
Hiring Inequalities	Employers and Executives
Promotion Inequalities	Employers and Executives

**Table 5. 2:** Performer of Discriminations by the Types of Gender  
 Disrimination (continued)

Payment Inequalities	Employers and Executives
Attitude Inequalities	Employers and Executives
Inequalities in terms of Supporting	Employers and Executives
Gendered Expectations	Employers and Executives
Struggling due to Maternity Leave and After	Employers and Executives
Slighting	Co-Workers
Pronouns	Co-Workers
Protection	Co-Workers
Exclusion	Co-Workers
Discrimination in Academy and Studies	Male Students and Teachers

As a result of qualitative analyses, I found that some women accept gendered structure in Turkey and gender roles while some of them are extremely against these kinds of discrimination and cannot stand that disparity. I concluded that, some women even accept these gender-based discrimination and expectations unwittingly so that they change the way they act, they aspect or they behave. In Table 5.2, the types of responses of interviewees can be seen.

**Table 5. 3:** Types of Responses of Women to Gender Discrimination

<b>Type of Responses to Gender Discrimination</b>
Getting angry and not accepting discrimination
Feeling lucky and thanful for not facing any discrimination
Accepting discrimination and playing according to gender roles
Unwittingly accepting discrimination and accepting male-behaviours, getting used to them

The most shocking thing for me is that women assume themselves as lucky if they did not face with any discrimination or experience any challenge due to

gender-based disparities. It is something that concerned me more than the responses that is accepting gender roles and playing accordingly with them. Accepting yourself as lucky due to not facing discrimination is really related with accepting gender discrimination and accepting that there is nothing to do to change it. It is something that shows us how sad the situation is for women. We do not need to be lucky; we need to be strong enough to fight for us and other women.

On the other hand, from Figure 13, it can be seen that the ratio of female to male labor force participation rate increases in terms of jobs with high income. However, in aerospace field, as I mentioned in Table 4. 2 (Comparison of Number of Women among the Members of Boards of Management in Aerospace-Related Companies) and “glass ceiling” part that number of women decreases when the position of job increases with is correlated with income level. From my qualitative analyses, I concluded that women are not always welcomed for higher positions due to gendered mindsets and number of women is so low for higher positions. That is why, I think that, in aerospace studies, the ratio of female to male labor force participation rate for high income jobs decreases. However, further studies should be done to understand yearly change since I can only rely on my qualitative findings. Yearly numbers of different companies should be gathered to see actual results.

Based on both literature reviews and qualitative analyses on the experiences of participants, I conclude that aerospace field is male-dominated and there exist various versions of gender discrimination in aerospace studies in Turkey. Within the context of this study, I investigate working life, education life, academic life and job seeking process of individuals to understand to what extent gender discrimination occurs and how it impacts women’s lives. I came to the inference that gender discrimination shows itself as glass ceiling, inequalities in hiring, payment and promotion, disparities in attitudes and the level of support from superiors, alienation, defined expectations, slighting, acting like women are in need of protection, differences in terms of preferred pronouns and, challenges during maternity leave and childcare process. From

the findings, I found out that employees, executives, co-workers, classmates, teachers are the performers of these discriminations. In fact, I discovered that both women and men discriminate women. As a result of these discriminations, some women get angry, some of them do not accept these gendered mindsets and some of them seen as unlikable due to not playing their gendered-roles as expected. On the contrary, I discovered that some women accept gendered-mindset without even realizing it and some women do not want to get in trouble so they just knuckle under. Sadly, I discovered that, in Turkey, if women do not face with gender-related inequalities and challenges or face with less discrimination than others, they assume themselves as lucky and thank to God. To be able to eliminate gender-based discriminations and increase the visibility of women in aerospace field, there should be developed public policies, fiscal policies and special events to increase awareness about gender-based disparities in Turkey.

## **CHAPTER 6**

### **RECOMMENDATION OF POLICIES AND FURTHER SUGGESTIONS**

The topic of gender equality in Turkey dates back to the early days of the Turkish Republic, in terms of legal reforms and societal awareness. In 1925, a women's political participation movement was organized under the leadership of Nezihe Muhittin who also founded the Kadınlar Halk Firkasi (Women's People Organization), a political party dedicated to women's rights. Turkish women were granted the right to vote in municipal elections in 1930 and national elections in 1934, as well as the ability to run for office. In this respect, Turkish women were able to exercise their political rights, voting and being elected to public office, many years earlier than their European counterparts<sup>93</sup>.

Turkey signed the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW) in 1985, and the Additional Protocol to CEDAW in 2000. Furthermore, Turkey joined the Optional Protocol to the Convention on the Elimination of Discrimination Against Women (CEDAW) in 2002, which gave women the ability to file individual complaints with the Convention's Committee on the Elimination of Discrimination Against Women.

In May 2003, the legislation on employment revised to guarantee equal treatment regardless of gender, race or ethnicity as a new labour law, Law no.4857.

In 2006, the General Directorate of the Turkish Employment Organization issued a directive preventing public sector employers from discriminating

against women in the workplace unless biological reasons or the nature of the job need it. This Directive was delivered to 81 Provincial Directorates, and its implementation is monitored ("Turkey", n.d.).

The Law for the Equal Opportunities Commission for Women and Men was enacted in February 2009 as Law no 5840. As a result, in March 2009, the Turkish Grand National Assembly established an Equal Opportunities Commission, comprised of lawmakers from various political parties. This assumed as a significant step forward for Turkey's gender equality, since having a Commission at this level means that law proposals and amendments prepared by the government and/or parliamentary commissions are reviewed by the Commission from a gender equality viewpoint. The Commission is working to establish mechanisms that will end gender-based discrimination at all levels of society. In this case, individual applications and complaints on gender-based discrimination from all parts of Turkish society are also accepted. The Commission also verifies that Turkish legislation is compatible with Turkey's international obligations, such as CEDAW (Müftüler, 2012).

In 2014, UN Women Europe and Central Asia Regional Office established in İstanbul, Turkey. UN Women Unit operating in Ankara, since 2012, carries out projects in Turkey. In 2016, UN Women, public institutions and organizations, civil society and other UN agencies in Turkey accelerated their work with partnerships and collaborations (BM Toplumsal Cinsiyet Eşitliği Ve Kadinin Güçlenmesi Birimi, n.d.).

UN Women advocates for Women's Empowerment Principles (WEPs) to increase women's leadership and participation in the private and public sectors. WEPs review policies and practices for women's empowerment and, supports the signatory institutions for the implementation of new ones. UN Women's Unit in cooperation with UN Global Compact prepared Women's Empowerment Principles Implementation Guide by collaborating with Women's Empowerment Working Group of Turkey. It is quite interesting that Turkey is the second country worldwide in terms of having maximum number



of signatories to WEPs (BM Toplumsal Cinsiyet Eşitliği Ve Kadinin Güçlenmesi Birimi, n.d.).

Although all these actions that Turkey took to eliminate gender discrimination against women, gender-based inequalities still exist in so many fields, social life and working life. As a result of analyses that I have done in this study, by looking at all the findings, I answered my research question that women have been contributing in aerospace studies with a considerable amount of endeavor by facing various kinds of gender discrimination. Therefore, various public and fiscal policy designs are needed to eliminate gender inequalities. Also, I believe that recommendations on how to enlighten people about the fact that gender discrimination exists and is needed to be eliminated, how to prevent these discriminations and how to increase the participation level of women in aerospace field are needed as well. I prepared Table 6.1 to provide better understanding and general look on specific focus points with recommended policies and several suggestions for different types of gender discrimination in aerospace field I discovered.

**Table 6. 1:** Specific Focus Points with Recommended Policies and Several Suggestions for Different Types of Gender Discrimination in Aerospace Field

<b>Focus Points</b>	<b>Recommended Policy and Further Suggestions</b>	<b>Relevant Policy Instruments</b>	<b>Targeted Type of Discrimination</b>
<b>Increasing the number of women and their access level to the labour force</b>	Properly designed fiscal policies to address low participation rates of women in aerospace field	Tax wedge can be reduced for especially women in aerospace field to prod women into enter aerospace field more.	- Glass Ceiling - Hiring Inequalities - Promotion Inequalities
		Providing child care subsidies can increase labor force participation of women, especially working mothers	

**Table 6. 2:** Specific Focus Points with Recommended Policies and Several Suggestions for Different Types of Gender Discrimination in Aerospace Field (continued)

		Prociding incentives for government agencies and private sectors perform in aerospace field if they can achieve specific percentage of women employees in their organization	
		Decreasing hiring costs for women in aerospace field	
	Redesigned periodical inspections	Focusing on gender-based issues in private sectors and governmental agencies in aerospace field and make periodical inspections to see whether they apply gender-equal policies, operations and services	
	Special policy instruments	Laws to set specific percentage or number of women in executive higher positions and boards	
		Adoption of anti-discrimination legislations	
	Providing special lectures	To increase knowledge of people about gender discrimination, case studies and real-life examples	- Slighting - Exclusion - Beliving women are in need of protection
<b>Encouraging women to raise awareness &amp; interest</b>	Eliminating gender-based educational separation of female and male students	Special events to encourage students, especially female students, to be a part of stem and aerospace field by continuing their education in related majors	- Discrimination in Academy and Studies
		Female mentors can be assigned for female students to guide them	

**Table 6. 3:** Specific Focus Points with Recommended Policies and Several Suggestions for Different Types of Gender Discrimination in Aerospace Field (continued)

<b>Awareness raising events in aerospace industry</b>	Informative events in the workplaces to enhance women's visibility	Special events and informative panels are needed to be done to inform women what are their rights, how they can deal with these kind of gender-based difficulties, what are the possible solutions	<ul style="list-style-type: none"> <li>- Attitude Inequalities</li> <li>- Inequalities in terms of Supporting Women</li> <li>- Gendered Expectations</li> </ul>
	Informative events for men and decision-making bodies	Enlighten them about the exist discrimination, what are their consequences and negative impacts on company	
	Changing hiring policies of companies	Committing to not discriminate women in the workplaces	
<b>Supporting HeForShe movement</b>	Supporting special realizing movements	Both men and women from various private companies, universities and governmental agencies can be a part of this campaign and gain more information, see real-life examples and solutions creating gender sensitive policies to encourage women, support them and achieve sustainable gender equality	- All types of gender discrimination
<b>Eliminating payment inequalities</b>	Redesigned periodical inspections	Responsibility of inspections should be given to the specific institutions to control payment policies and structure of the company and analyze employers' salaries to see whether there exists any discrimination.	- Payment Inequalities
	Developed evaluation policies	Evaluation policies of private companies in aerospace studies should be developed in order to ensure that evaluations are done without any bias and gender-based discrimination	

**Table 6. 4:** Specific Focus Points with Recommended Policies and Several Suggestions for Different Types of Gender Discrimination in Aerospace Field (continued)

	New fiscal policies	Applying different taxing policies and decreasing tax wedges for women who have same jobs and responsibilities with men, work equally or more than men; however, earn less than men, the net income level of women can catch up with net income of men (special taxing policies should be applied for different companies and roles)	
<b>Increasing number of women's projects funded by tubitak</b>	Designing new system for funding scientific and technological research projects from the point of public policies	New funding system that prioritizes women	<ul style="list-style-type: none"> <li>- Discrimination in Academy and Studies</li> <li>- Inequalities in terms of Supporting Women</li> <li>- Gendered Expectations</li> </ul>
		Decision mechanism should be developed so that there is almost no gender-biased reviews	
		Determined number of percentage of women, especially as a coordinator, to be selected among the applicants	
		Campaigns for aerospace studies to encourage more women to make their decisions into projects	
<b>Decreasing maternity issues</b>	Developing the legislations on maternity leave	Establishing redesigned parental leave system to make both parents have the right to take leave and be responsible of childcare	<ul style="list-style-type: none"> <li>- Struggling due to Maternity Leave and After</li> </ul>
	Redesign public policy	Changing the concept from "maternity leave" to "paternity leave" to achieve gender neutral language and system	

**Table 6. 5:** Specific Focus Points with Recommended Policies and Several Suggestions for Different Types of Gender Discrimination in Aerospace Field (continued)

	Redesigning companies' policies	Enough number of lactation rooms should be available in every building where women work in aerospace field	
		If the position of the company or institutions is really far away from the home of mothers who have young child, flexible working hours can be available	

I will recommend some public and fiscal policies, possible improved policies for companies and provide further suggestions as special events, lectures and improved systems. I will emphasize on these in detail by focusing on 7 different points which I believe the most important ones to consider while eliminating gender inequalities in aerospace studies. These are increasing the number of women and their access level to the labour force, encouraging women to raise awareness & interest, awareness raising events in aerospace industry, Supporting HeForShe movement, eliminating payment inequalities, increasing number of women's projects funded by TUBITAK and decreasing maternity issues.

### **6.1 Increasing the Number of Women and Access to the Labour Force**

In regards of women's employment opportunities, Article 5 of the Constitution states clearly: "There cannot be any discrimination in the workplace based on language, race, gender, philosophical ideology, political alignment, religion, or anything else similar."<sup>93</sup> However, in reality, women face with gender-based discrimination in terms of hiring and promoting. From the literature, we can see the same numeric results in the second chapter as well. That is why women number in aerospace field is so low than men. In this respect, I explained in the findings chapter that women encountered various examples of hiring and

promoting inequalities in aerospace studies. Especially, when the level of job that they have been candidate for increases, the impact level of gender discrimination increases and it result in glass ceiling concept.

Regardless of female or male, every woman and man need to leave the gendered discourse. As I mentioned in literature review chapter, gender discrimination is a symbol system which is diffused in our language's logic and it promotes men's value by accepting that it is superior than women's value. Since the language determines the way we define social structures, our society's social structures, norms and thought patterns are shaped accordingly with gender-based discriminations. There are countless phrases support the patriarchy. The society accepts the general perception that men are strong and clever, women are more emotional and fragile. As I made it clear in promotion inequality's part, this is the one reason why women do not get promoted.

Some women actually acknowledged the gendered expectations, maybe unconsciously. They believe that men are calm, women are not and she was able to do her job without having any experience of discrimination by being like a man. It is again related with seen women as aggressive, who often attitudinize and get angry.

Another diffusion of the gender discrimination in our language is that some jobs are suitable for men and some of them are for women. This prevents women from getting the job which is what they actually want. If one woman tries to be in a major that is not defined for woman or tries to find a job which is outside of defined suitable jobs for women, they immediately face with gender-based comments and discrimination. They are assumed as nonlogical and undesirable since they do not play their defined roles.

Similarly with the pronouns part in findings chapter, the pronouns that are used for women and men differ in a way that supports gendered structure in workplace. Additionally, the unequal attitudes of managers and employees towards women and men have a huge impact on other lower-level employers in terms of not promoting them, not hiring them. These gender-based

discrimination in our language and behaviors actually set an example for next generations and juniors. They see it, they hear it, they accept it as normal. Unconsciously, they act and speak in an according way and, as a result, gender discrimination continues. To eliminate it, people need to leave gender-based mindset in workplace and accept that women and men are equal.

Consequently, the number of women in aerospace field should be improved in order to show people that women can work in this field, be successful engineers, lead a team, be in higher positions, achieve success among male-dominated working places.

Additionally, according to 11<sup>th</sup> Development Plan of Strategy and Budget Authority of The Presidency of The Republic of Turkey, during the plan period, 4.3 million additional employments are planning to be achieved, with an annual average increase of 2.8 percent and, in addition to the rapid employment growth, through policies towards the labor market, especially with the increasing participation level of women in business life, it is estimated that labor force participation rate will increase to 56.4 percent (Türkiye Cumhuriyeti Cumhurbaşkanlığı Strateji ve Bütçe Başkanlığı, 2019). It is mentioned in the plan that the construction of a strong society will be possible with the empowerment of women. In this context, in order to increase women's participation level of women in social and economic life, facilitate access to resources and equal job opportunities, efforts are needed to be made to raise awareness in order to improve women's status in the society.

To be able to access more women to labour force and eliminate these gender discriminations in terms of hiring and promoting, achieve stronger society and better economy there should be some policies, various improvements and special events.

I believe that properly designed fiscal policies are really significant in order to increase employment level of women. The scope for these fiscal policies should be addressing low participation rates of women in STEM, especially in aerospace field. The focus points of these fiscal policies can be taxes, family

benefits and lack of jobs for women in aerospace field. Firstly, tax wedge can be reduced for especially women in aerospace field to prod women into enter aerospace field more. This can be extremely beneficial since it will increase the total income level of the house for the married women. For example, in France, Portugal, and the United States, family taxation is applied by applying decreased tax wedges for secondary earner ("Fiscal Policy and Employment in Advanced and Emerging Economies", 2012). This can be influential on patriarchal men's opinions in terms of not letting their wives, daughters or sisters to work. Secondly, reforming family benefit systems and providing child care subsidies can increase labor force participation of women, especially working mothers. In terms of family incentives, in Turkey, maternal leave is publicly financed and grantee is given to them in terms of returning to the previous job. This makes women still be in connection with labour market. Paid maternal leave can be increased for women in aerospace field. However, if this paid leave becomes very long, it results in descension of their skills and capacities, prevent them to return to the labour market and getting possible employment opportunities. There is trade off here. To eliminate this risk, designing family benefits and special benefits for children can be linked with labour force participation. Generally, women in Turkey take leave during the first year of postpartum. They raise their baby and take care of them during one year in terms of being able to breastfeed, witness the first steps and words and so on. After that, they have to decide between rejoining the labour force and being stayed home mother since providing baby-sitter is very expensive in Turkey if one wants to find well-educated, experienced and bilingual baby-sitter. Due to this fact, women mostly choose to be at home and take care of their children by themselves. It is clear that available childcare is supportive for participation in labour force of families, especially women. In this respect, child care subsidies can be provided to working mothers in aerospace field to encourage them to return working life without hesitation on family budget and providing baby-sitter more easily in a financial way. Thirdly, government agencies and private sectors perform in aerospace field can be provided with incentives if they can achieve specific percentage of women employees in their



organization. This can lead agencies and companies to hire more women and provide more job opportunities by prioritizing women.

There can be special policy instruments for private sectors and special institutions in aerospace field to increase number of women in leadership positions to break the glass ceiling in private sector in aerospace field. There can be laws to set specific percentage or number of women in executive higher positions, boards and so on. Moreover, institutions and private companies, specific diversity policies can be implemented for higher positions and decision-making bodies to be able to criticize important decisions from the gender-neutral point of views. I believe, for private companies and institutions, this can be really useful to prevent future gender-based decisions or unintentional results that can promote gender discrimination. Furthermore, awareness-raising and encouraging methods can be applied to enable higher participation of women in management and decision-making bodies in the private sector. Professional lectures can be taken from academicians and experts to increase knowledge of people about gender discrimination, case studies and real-life examples can be shown to make it clearer that how pathetic gender-based discrimination is. In this case, incentives can be provided to take professional support.

Another recommendation can be decreasing hiring costs for women in aerospace field. Due to the employment protection legislation, both hiring and firing are costly for private companies ("OECD Indicators of Employment Protection - OECD", 2021). That is why I think, this can impact the recruiting team's opinion when it comes to hire a woman for higher positions since it is assumed that women cannot be successful as a manager and cannot lead a team in a successful way. Recruiting team can think that if they give a chance to that woman and she fails, there will be also firing costs in addition to the hiring cost. Eventually, it is possible to choose men since it will be more reassuring for them due to the gender-based expectations.

In addition to all of these, for government organizations, I believe there can be defined gender inspection procedures and responsible institutions should be

determined. I think these institutions should be classified in terms of the field of companies that they will inspect. From the point of this study, these responsible institutions will only focus on gender-based issues in private sectors and governmental agencies in aerospace field and make periodical inspections to see whether they apply gender-equal policies, operations and services. Adoption of anti-discrimination legislations should be achieved and maintained. Additionally, promotion process and procedures must be controlled as well since it is one of the biggest issues for women in terms of gender inequalities.

On the contrary, the question of whether the increase in the number of women in employment empowers women is a controversial issue due to low wages, unfavorable working conditions and increased workload of women due to household responsibilities.

## **6.2 Encouraging Women to Raise Awareness & Interest**

In Turkey, Women and Education Monitoring Committee was established to control and maintain the plans on “women and education” as one of the main topics in Gender Equality Action Plan of Turkey ("Turkey", n.d.). Now, it is planned to achieve gender quality and eliminate all gender disparities in terms of equal access to all levels of education by 2030. Moreover, Turkey is also planning to build gender sensitive, inclusive and safe learning environment (UNDP, 2020). These are significant goals for Turkey to develop effective education environment and achieve gender parity. However, although Turkey almost achieved gender parity for preprimary level education, there exists huge gender disparity in education. Women and female children face challenges to enroll in educational system due to gender-based reasons such as it is not appropriate for girls to be an engineer, study mechanics or it is not necessary for female children to learn and get educated since their main reason for being is to be successful wife by giving birth to children, raising them, fulfilling household duties on time and making their husband happy. To eliminate these barriers and increase the number of women in aerospace field, effective policies and special organizations should be designed.

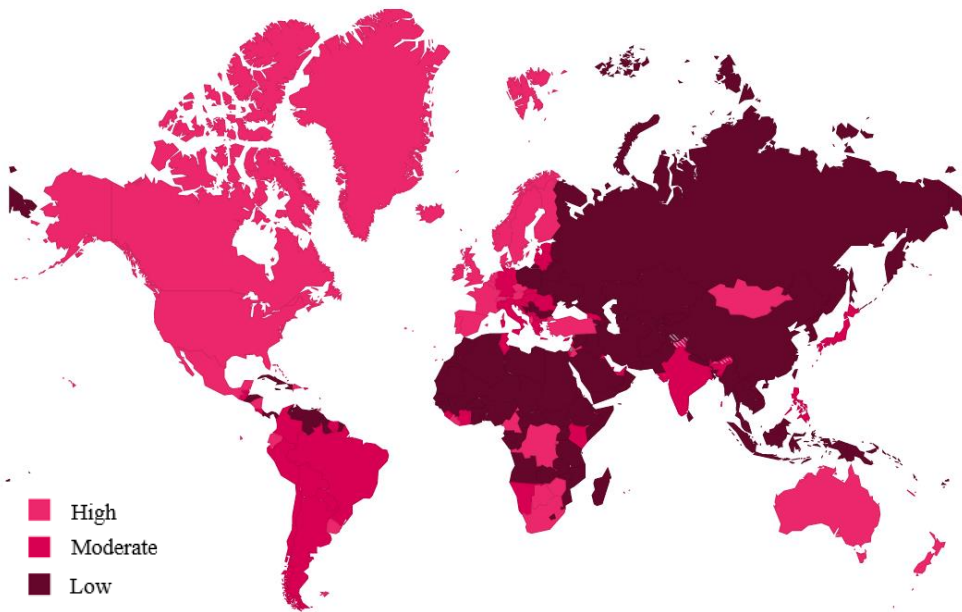
Due to the stereotypes in education, gender discrimination exists in both education and labor market. To eliminate the gender disparity in labour market, it is necessary to eliminate gender-based educational separation of female and male students. In this case, sustainable alterations needed to be made to increase women's interest in aerospace field with high self-confidence. There can be special events provided by both governmental agencies and private companies in aerospace field to encourage students, especially female students, to be a part of STEM and aerospace field by continuing their education in related majors. Female mentors from different companies and agencies can be assigned for female students to guide them by answering their questions, explaining that they can achieve whatever they want as long as they are willing to take the first step and solving their gender-based problems as much as possible.

### **6.3 Awareness Raising Events in Aerospace Industry**

In the workplaces, to eliminate the gender discriminations against women, there can be informative events, supportive movements to enhance women's visibility. I think that women's right to file a complaint about any type of gender-based discriminations is needed to be protected and guaranteed in an advance way since women are afraid of not getting their promotions, getting into trouble and facing more challenges if they complain about faced discrimination as I mentioned in findings. Periodically, special events and informative panels are needed to be done to inform women what are their rights, how they can deal with these kind of gender-based difficulties, what are the possible solutions and so on. Moreover, there should be informative events for men and decision-making bodies to enlighten them about the exist discrimination, what are their consequences and negative impacts on company and so on. Furthermore, for the hiring process, I believe signing and confirming that "I will not be a part of any gender-based discrimination activity and I will not discriminate anyone based on their sex, race and religion." can be intimidating.

## 6.4 Supporting HeForShe Movement

“HeForShe” campaign has been running in Turkey since 2015 by UN Women and it focuses on the solidarity for gender equality worldwide (“Turkey”, n.d.). Today, it has 40,224 commitments for HeForShe in Turkey and, in Figure 18, it can be seen that the level of support is really high in Turkey when it is compared globally (“HeForShe | Toplumsal Cinsiyet Eşitliği için Küresel Dayanışma Hareketi | HeForShe”, 2019). In this study, the results show that gender discrimination exists and it has extreme impacts on women’s lives in Turkey, in aerospace studies and various fields. It is well known that it is an enormous unignorable issue, that is why I believe that the intensity of Turkey is high.



**Figure 21:** Intensity of HeForShe Supporters and Leaders Globally

In this respect, to be able to prevent gender discrimination in workplace and in education, women endeavors and only women support for other women are not enough, everybody need to take actions to eliminate gender-based inequalities and support women as well. In aerospace field, men from various private companies, universities and governmental agencies can be a part of this campaign and gain more information, see real-life examples and solutions in

terms of creating gender sensitive policies to encourage women, support them and achieve sustainable gender equality.

### **6.5 Eliminating Payment Inequalities**

In 1967, The Board of Management of International Working Office signed “1951 Contract” in Geneva by accepting that equality of pay between female and male workers for work of equal value. Moreover, in regards of equal payments between women and men, The Constitution states that “There cannot be inequality of salaries based on gender for equivalent or equal jobs.”. However, payment inequalities based on gender differences can be faced in different places among aerospace studies. Women are paid less than men even they are doing the same job with the same effort, maybe more. Majority of women and men consider that gender pay gap will be diminished as more women join working life (Ryan, 2020). Increasing the number of women can eventually stop the payment inequalities. Besides that, in order to solve this issue, I believe that redesigned periodical inspections, developed evaluation policies and fiscal policies can be useful.

Firstly, responsibility of inspections should be given to the specific institutions to control payment policies and structure of the company and analyze employers’ salaries to see whether there exists any discrimination. Secondly, promotion is an impact on salary disparity. Changing in the title directly related with the changing in the salary. As I indicated, there exists promotion inequalities and glass ceiling in aerospace studies in Turkey. Men are promoted more and gain more even if changing in the status does not really mean doing more job than before. That is why, by accepting this inequality, I can suggest that evaluation policies of private companies in aerospace studies should be developed in order to ensure that evaluations are done without any bias and gender-based discrimination. By doing this, payment inequalities can be prevented. Lastly, as I discussed in “Increase the Number of Women and Access to the Labour Force” part, decreasing tax wedges can be useful fiscal policy for this issue as well. By applying different taxing policies and decreasing tax wedges for women who have same jobs and responsibilities with men, work

equally or more than men; however, earn less than men, the net income level of women can catch up with net income of men. In this case, special taxing policies should be applied for different companies and roles, this can be challenging.

### **6.6 Increasing Number of Women's Projects Funded by TUBITAK**

In the "Support Program (Lifeline Loan)" launched by the Small and Medium Sized Industry Development Organization (KOSGEB) in 2008, affirmative action has been used, giving women entrepreneurs the opportunity to benefit more than men from the 0% interest loan provided to manufacturers, artisans, and craftsmen ("Turkey", n.d.).

It is concluded that there are lots of women contribute in Scientific and Technological Research Projects in TUBITAK. However, it is also seen from the data gathered from TUBITAK that the number of women who joined these projects as coordinator and researcher still less than men. As I did the research on this topic, I concluded that there exists gender-based decision mechanism while deciding on funding and supporting the project that has a female coordinator, it should be accepted while looking the gathered information and all the experiences of female project applicants. To be able to increase the number of women in Scientific and Technological Research Projects and eliminate gender disparity, specific public policy can be designed. I believe that new funding system that prioritizes women will be effective. Decision mechanism should be developed so that there is almost no gender-biased reviews. Furthermore, there can be determined number of percentage of women, especially as a coordinator, to be selected among the applicants. There can be campaigns for aerospace studies to encourage more women to make their decisions into projects.

### **6.7 Decreasing Maternity Issues**

As I analyzed in the findings section, there exists gender-discrimination in terms of maternity leave and women face with issues such as promoting inequalities and limitation of the maternity leave duration they actually have the right to take. In this case, I think one of the biggest steps is developing the legislations

on maternity leave and establishing redesigned parental leave system to make both parents have the right to take leave and be responsible of childcare. Eventually, next step should be changing the concept from “maternity leave” to “paternity leave” to achieve gender neutral language and system.

Moreover, as it is provided in findings, lactation rooms are another issue that women encounter. It should be put into policies of private companies and governmental agencies that enough number of lactation rooms should be available in every building where women work in aerospace field. It can be acknowledged that household duties are assumed as mostly women’s responsibility and women are generally work at home as well. In this case, I believe flexible working hour policy can be applied in order to gain interest of women in aerospace field more and preventing their gender-based challenges. If the position of the company or institutions is really far away from the home of mothers who have young child, flexible working hours can be available as well.

## **CHAPTER 7**

### **CONCLUSION**

In this thesis, I focused on women in aerospace studies in Turkey. I uncovered the contribution level of women in aerospace studies in terms of completed studies in master's and doctoral degree. From this, I understood that women contributed in literature of aerospace field; however, it is still less than men. I gathered the data from TUBITAK about how many women participated in research studies in aerospace field as coordinator and researcher. By doing that, I achieved quantitative data about the number of women who participated in scientific research studies in aerospace field in Turkey. Once again, participation level of women is lower than men. Furthermore, to understand whether women face with gender discrimination in aerospace studies in Turkey, I conducted qualitative analyses by doing interviews and observation. I concluded that there exists gender discrimination in this field. Types of the gender-related discriminations are explained in detailed way with real experiences of women in aerospace field. I found that inequalities exist in terms of hiring, promoting, salary, supporting and the ways of behaviors. Moreover, women face with gender-related challenges in terms of maternity leave, being a mother with young kid, not taking seriously when it comes to lead a team, seen as fragile and in need of protection, alienation from social activities and business processes, struggles in academic life and being in higher positions. I explained the types of the discriminations, people who discriminates and how they do it and how women feel about this discrimination in detailed way. This thesis is the first in the aerospace-related literature in Turkey since it elucidates women's participations in aerospace studies and their experiences in terms of being discriminated and faced with disparities due to their gender.



To be able to solve gender discrimination in aerospace studies, I recommended redesigned and developed public policies, fiscal policies, special events and focus points to be able to increase the number of women and access to the labour force, increase the number of women in higher positions, eliminate promotion inequalities, encourage women to raise awareness & interest, increase awareness about gender-discrimination in aerospace industry, increase the support level of gender-neutral movements, eliminate payment inequalities, increase number of women's projects funded by TUBITAK and decreasing maternity issues.

As Latour says “we are all a part of a complex and inter connected system”. That is why, if one theory focuses on only one inequality factor and ignore the other ones, it will not be effective. All the network will impact each other and eventually one inequality will get bigger and bigger that will cause so many things which will affect other actors. That is why, impact analysis and further studies should be carried on to be able to achieve the most effective policies and solutions to eliminate gender discrimination in aerospace field without creating different problems, unintentional disparities and unhappiness.

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## APPENDICES

### A. APPROVAL OF THE METU HUMAN SUBJECTS ETHICS COMMITTEE

UYGULAMALI ETİK ARAŞTIRMA MERKEZİ  
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01 ARALIK 2021

Konu : Değerlendirme Sonucu

Gönderen: ODTÜ İnsan Araştırmaları Etik Kurulu (İAEK)

İlgi : İnsan Araştırmaları Etik Kurulu Başvurusu

**Sayın Arsev Umur AYDINOĞLU**

Danışmanlığını yürüttüğünüz Cansu ALDEMİR'in "Uzay ve Havacılık Çalışmalarına Kadınların Katkısı ve Deneyimleri" başlıklı araştırmanız İnsan Araştırmaları Etik Kurulu tarafından uygun görülmüş ve **447-ODTU-2021** protokol numarası ile onaylanmıştır.

Saygılarımızla bilgilerinize sunarız.

Prof. Dr. Mine MISIRLISOY  
İAEK Başkanı

## B. QDA MINER COODEBOOK

### Job Choice

- Role Model
- Impact of men
- Reason for selecting the job
- Comment on gender for job selection

### Social Environment

- Expectations from women
- Opposing views on expectations
- Acceptance of gendered roles

### Working Environment

- Women rate in general
- Responsibilities and Studies
- Key contributions
- Election Process
- Promotion Process
- Importance of Studies for Interviewee
- women in first manager level
- Why there is a malestream?
- How women feel about working in this field?
- Importance of the profession
- No women in upper manager level
- Reason for less women in this field
- Where women feel comfortable to work?
- Age Distribution
- Educational Level
- Communication
- Feelings about less women in this field
- Where the number of women increases
- Lactation Problem

### Unv. Department Choice

- Reason for choosing
- Comments on gender
- Too soon to select
- Impacts of men
- Gender distribution at unv.
- less women in mechanical science
- less women in electric eng.
- more women in industrial eng.
- more women in food eng.
- why less women
- Impacts of family
- less women in aerospace engineering
- more women in chemical eng.

### Experiences of Inequalities from managers

- Payment Inequalities
- Promotion Inequalities
- Inequalities in Attitudes of Managers
- Hiring Inequalities

- Number of women
- Thoughts on inequalities
- Inequalities in supporting
- Declining of inequalities
- Struggle of women with children
- Discrimination by using jokes
- Struggle due to maternity leave
- Reasons for discrimination by managers
- Gendered expectations

### Experiences of Inequalities among co-workers

- Exclusion from the team
- Discrimination by joking
- Thoughts on discrimination by co-workers
- Slighting
- Avoiding Physical Contact
- Thinks women need protection
- Problems towards pronouns

### Feeling supported

- Support from co-workers
- Support from managers
- Support from family

### Balance btw working and personal life

- Work is predominant
- Personal life is predominant
- Changing of priorities
- School is predominant

### Domestic Responsibilities

- Help from husband
- Equal Division of Labor
- Help from housemaid
- Women's Responsibility
- help from family

### No experience of inequalities

- Assuming herself as manlike
- Getting used to male dominated work life
- Being male junior-senior employees
- Awareness and precautions

### Why/how promoted?

- her male manager got promoted
- Found successful
- Gendered behavioral expectations
- At least one women

### Positive Discrimination

- Positive Discrimination in unv.
- Positive Discrimination in working environment

### **Impact of Covid**

- Educational Life
- Husband works from home
- Internships
- Impact on studies

- Support Students' Projects
- Improving educational system
- Opportunities for Abroad Education
- Encourage women and children
- He for she movement

### **Turkey's Status**

- Problems
- Studies
- Opportunities
- Lack of support to students
- Supports
- Future Focus Points

### **Being Lucky**

- Lucky
- thankful

### **Unv. Environment**

- Inequalities
- Women Rate
- Importance of aerospace department

### **Problems about academicians**

- Deviating from the aim
- insufficient resources

### **Discrimination in unv. environment**

- Experienced Discriminations
- Reason for discrimination at unv.
- People who discriminate
- thoughts on discrimination
- Studies and projects
- Supportive Movements

### **For The Future**

#### **Aims**

- Future Plans of Students
- Future Expectations of Employees
- Future goals of Academicians

#### **Expectations**

- Being Stronger
- Being a Pacemaker
- Impact of the Dijitalization

#### **Focuss Points**

- Focus Points
- Increasing the number of women in universities
- Number of women in universities
- Number of women who are ready to work in this field
- Increasing number of women in male dominant areas
- Leaving gendered discourse
- Social Activities in Companies
- Increase Interest

## C. INTERVIEW QUESTIONS

Başlangıç Seviyelerdeki Çalışanlar İçin:

1. Öncelikle kendinizden, eğitim ve meslek hayatınızdan bahsedebilir misiniz?
2. Üniversite bölüm seçme süreciniz nasıldı? Bu bölümü / mesleği seçmenizde özel bir sebep var mıdır?
3. Üniversite bölüm ve meslek seçiminde cinsiyetinize bağlı yorumlar aldınız mı? Olumlu ya da olumsuz görüşlerde bulunuldu mu?
4. Sizin için mesleğinizin sahip olduğu önemden bahsedebilir misiniz?
5. Çalıştığınız pozisyona başvuru ve kabul sürecinizden bahsedebilir misiniz?
6. Uzay alanında yapmış ve yapmakta olduğunuz çalışmalardan bahseder misiniz? Sizce çalışmalarınızın önemi nedir? Bu çalışmaları kimlerle yürütüyorsunuz ve görev dağılımı neye göre yapılmakta?
7. Mesleğinizde kadın ve erkekler için çizilen imajlar aynı mı? Cinsiyetler arası beklenti seviyesi ve saygınlık sizce aynı seviyede mi?
8. İş hayatınızdaki yükselme sistemi hakkında bilginiz bulunmakta mı? Objektif gereklilikleri sağladıkça mı yükselme olur?
9. Yöneticileriniz arasında cinsiyet dağılımı nasıl?  
(Kadınlar ağırlıkta ise) Bu size nasıl hissettirmekte? Olumlu ya da olumsuz yanları var mıdır?
10. Çalışma ortamınızdan biraz bahsedebilir misiniz? Kişiler arası ilişkiler, eğitim düzeyi ve yaş dağılımı nasıl? Sizin için olumlu ve olumsuz yönleri nelerdir?
11. İş hayatınızda ve çalışma ortamınızda cinsiyet dağılımı nasıl ve cinsiyet ayrımı yönünde bir algı var mı? Cinsiyet farkı ya da cinsiyetçilik sebebi ile karşılaştığınız herhangi bir durum oldu mu?
12. İşiniz ve bireysel aile yaşantınızın dengesini nasıl sağlıyorsunuz? Sizce ağır basan bir taraf var mı? Neden?  
(Evlü ise) evdeki sorumlulukları nasıl bölüşmektесiniz?

(Katılımcı kadınsa ve çocuk varsa) Hamilelik sürecinde karşılaştığınız zorluklar oldu mu? Hamilelik kariyerinizi etkiledi mi? Bu yönde olumsuz yorumlar aldınız mı? Doğum izni kullandınız mı?

(Çocuk varsa) Çocuk büyütme aşamasında iş bölümünü nasıl yaptınız? Bakıcı, kreş vs gibi destek aldınız mı?

13. Kariyer hedefleriniz nelerdir?

Kıdemli Çalışanlar İçin:

1. Öncelikle kendinizden, eğitim ve meslek hayatınızdan bahsedebilir misiniz?
2. Üniversite bölüm seçme süreciniz nasıldı? Bu bölümü / mesleği seçmenizde özel bir sebep var mıdır?
3. Üniversite bölüm ve meslek seçiminde cinsiyetinize bağlı yorumlar aldınız mı? Olumlu ya da olumsuz görüşlerde bulunuldu mu?
4. Sizin için mesleğinizin sahip olduğu önemden bahsedebilir misiniz?
5. Meslek hayatında şimdiye kadar çalıştığınız pozisyonlar ve değişim süreciniz nasıl gerçekleşti?
6. Çalıştığınız pozisyona başvuru ve kabul sürecinizden bahsedebilir misiniz?
7. Uzay alanında yapmış ve yapmakta olduğunuz çalışmalardan bahseder misiniz? Sizce çalışmalarınızın önemi nedir? Bu çalışmalarını kimlerle yürütürsünüz ve görev dağılımı neye göre yapılmakta?
8. Mesleğinizde kadın ve erkekler için çizilen imajlar aynı mı? Cinsiyetler arası saygınlık sizce aynı seviyede mi?
9. İş hayatınızdaki yükselme sistemi nasıl? Objektif gereklilikleri sağladıkça mı yükselme olur?
10. Şu ana kadar çalıştığınız ve çalışmakta olduğunuz akademisyenler /size bağlı çalışanlar arasındaki cinsiyet dağılımı nasıldı?  
(Kadın oranı fazlaysa) Bu durum size nasıl hissettirdi? Olumlu ve olumsuz yönleri nelerdi?
11. Çalışma ortamınızdan biraz bahsedebilir misiniz? Kişiler arası ilişkiler, eğitim düzeyi ve yaş dağılımı nasıl? Sizin için olumlu ve olumsuz yönleri nelerdir?



12. İş hayatınızda ve çalışma ortamınızda cinsiyet dağılımı nasıl ve ayrımı yönünde bir algı var mı? Cinsiyet farkı ya da cinsiyetçilik sebebi ile karşılaştığınız herhangi bir durum oldu mu?

13. İşiniz ve bireysel aile yaşantınızın dengesini nasıl sağlıyorsunuz? Sizce ağır basan bir taraf var mı? Neden?

(Evli ise) evdeki sorumlulukları nasıl bölüşmektesiniz?

(Katılımcı kadınsa ve çocuk varsa) Hamilelik sürecinde karşılaştığınız zorluklar oldu mu? Hamilelik kariyerinizi etkiledi mi? Bu yönde olumsuz yorumlar aldınız mı? Doğum izni kullandınız mı?

(Çocuk varsa) Çocuk büyütme aşamasında iş bölümünü nasıl yaptınız? Bakıcı, kreş vs gibi destek aldınız mı?

14. Sizce kariyer yolculuğunuzun hangi aşamasındasınız? Bundan sonrası için hedefleriniz doğrultusunda size neler bekliyor?

Öğrenciler için:

1. Öncelikle kendinizden ve eğitim hayatınızdan bahsedebilir misiniz?
2. Üniversite bölüm seçme süreciniz nasıldı? Bu bölümü seçmenizde özel bir sebep var mıdır?
3. Üniversite bölüm ve meslek seçiminde cinsiyetinize bağlı yorumlar aldınız mı? Olumlu ya da olumsuz görüşlerde bulunuldu mu?
4. Sizin için bölümünüzün ve mesleğinizin sahip olduğu önemden bahsedebilir misiniz?
5. Uzay alanında yapmış ve yapmakta olduğunuz çalışmalardan bahseder misiniz? Sizce çalışmalarınızın önemi nedir? Bu çalışmaları kimlerle yürüyorsunuz ve görev dağılımı neye göre yapılmakta?
6. Bölümünüzde ve mesleğinizde kadın ve erkekler için çizilen imajlar aynı mı? Cinsiyetler arası saygınlık sizce aynı seviyede mi?
7. Okul ve sınıf ortamından biraz bahsedebilir misiniz? Sizin için olumlu ve olumsuz yönleri nelerdir?
8. Okul ortamında cinsiyet dağılımı nasıl ve cinsiyet ayrımı yönünde bir algı var mı? Cinsiyet farkı ya da cinsiyetçilik sebebi ile karşılaştığınız herhangi bir durum oldu mu?

9. Akademik yařantınız ve bireysel aile yařantınızın dengesini nasıl sađlıyorsunuz? Sizce ağır basan bir taraf var mı? Neden?
10. Mezuniyet sonrası için planlarınız nelerdir? Ulařmayı istediđiniz hedefler var mı?

## **D. TURKISH SUMMARY / TÜRKÇE ÖZET**

Bilim ve teknoloji alanında, bu alanın erkekler için uygun olduğu konusunda süregelen genel bir yargı bulunmaktadır. Bilim, teknoloji, mühendislik ve matematik (STEM) alanının kadınlara ait bir yer olmadığına inanılmaktadır, bu cinsiyet bazlı ayrımcılık sebebiyle STEM alanı erkek egemen hale gelmektedir. Bu ayrımcılıkların işe alma, işten çıkarma, terfi, maaş, dışlama ve saygı kapsamalarında olduğu gözlenmektedir.

Günümüzde STEM'in en popüler alanlarından biri "Uzay" alanıdır. Uzay alanında çok fazla çalışmalar yapılmaktadır. Tüm bu çalışmaların kronolojisine internetteki çeşitli makaleler, haberler ve halka açık sitelerden ulaşılabilmektedir. Tüm bu kaynaklardan edinilen bilgiler doğrultusunda, uzay alanının gerçekten erkek egemen bir alan olduğu görülmektedir. Kadınların uzay çalışmalarına katılımı anlamında, bir kadının uzaya astronot, komutan, bilim adamı veya ziyaretçi olarak gitmesi durumunda mevcut bilgi ve kronoloji bulunmaktadır. Uzaya çıkmadan önce karada yapılan uzay çalışmalarında kadınların katkıları hakkında kesin bilgiler bulunmamaktadır. Bazı ülkelerde, uzay çalışmalarına katılan kadınların geçmişine ve cinsiyete dayalı ayrımcılık nedeniyle yaşadıkları zorluklara internet, makaleler ve kitaplar aracılığıyla erişilebilmektedir. Ancak Türkiye'de bu konularda yeterli bilgi ve çalışma olmadığı için Türkiye'deki uzay çalışmalarına katılan kadınların geçmişi ve cinsiyete dayalı ayrımcılık nedeniyle yaşadıkları zorluklar bilinmemektedir.

Bu tezde, kadınların, uzay çalışmalarına katkısına odaklanmakta ve Türkiye'de cinsiyet ayrımcılığı, cinsiyete dayalı eşitsizlikler ve zorluklarla yüzleşme konusundaki deneyimlerini netleştirmekteyim.

### **1. STEM Alanında Cinsiyet Ayrımcılığı**

Kadınlar STEM'deki iş gücünün yaklaşık %28'ini oluşturmaktadır. İlgili alanın ve bu alanda faaliyet gösteren işyerlerinin erkek egemenliğinde

olmasından ötürü, STEM'de kariyerlerine başlayan kadınlar büyük ayrımcılıklarla karşılaşmakta, katkıları göz ardı edilmekte, iş süreçleri ve sosyal aktivitelerden dışlanmakta, aynı pozisyondaki erkeklerden daha az maaş almakta ve cam tavan sebebiyle yükselememektedir. STEM alanından mezun olan kadınlar, daha yüksek başarı oranına ve puana sahip olsalar bile, erkeklerden daha düşük gelire işe alınmaktadır. İnsanlar, işlerinde açıkça başarılı olmadıkları sürece, kadınların, “erkek” işlerinde erkeklerden daha az becerikli oldukları düşüncesine sahiptir. Bir başka açıdan, bir kadın “erkeksi” bir işte açıkça yetenekliyse, insanlar onu daha az sevilebilir olarak görmektedir. Cinsiyet ayrımcılığından biri de cinsel tacizdir.

Bu cinsiyet ayrımcılığının üstesinden gelmek için kadınlar genellikle iş arkadaşlarından uzaklaşmakta, erkeksi davranış ve normları kabul etmekte ve hatta işlerini bırakmaktadır.

Sayım Bürosu'nun 2019 yılı raporuna göre kadınların katılım oranı, özellikle uzay alanında önemli ölçüde düşüktür. 2008 yılında, istihdam edilen kadın profesyonellerin %10,3'ü uzay mühendisi olarak çalışmaktayken bu oran 2014 yılında %9'a düşmüştür.

Uzaya gitme anlamında kadınlar aslında erkeklere göre daha avantajlı durumdadır. 1950'lerde yapılan araştırmalar kadın bedenlerinin daha güçlü kalplere sahip olduğunu ve maruz kalınacak titreşimler ve radyasyona karşı daha dayanıklı olduğunu göstermiştir. Psikolojik araştırmalar da kadınların izole edildikleri ve duyuşal girdilerden yoksun bırakıldıkları durumlarla erkeklerden daha iyi başa çıkabildikleri sonucuna ulaştırmıştır. Bunların yanında, kadınların daha küçük bedenlere sahip olması, az kalori ihtiyacı ve az ağırlık yaratması ile uçuşlarda daha az maliyete sebep olduğu hesaplanmıştır. Tüm bunlara rağmen, bugüne kadar toplamda 506 erkek astronot ve 64 kadın astronot fırlatılmış ve erkek astronotların toplam uçuş sayısının 1148, kadın astronotların toplam uçuş sayısının 146 olduğu raporlanmıştır.

## 2. Türkiye’de Cinsiyetçi Yapı

Küresel Cinsiyet Uçurumu Endeksi 2021 sıralamasına göre Türkiye, 156 ülke arasında 133. sırada yer almaktadır. Türkiye, ekonomik katılım ve fırsat açısından 156 ülke arasında 140., eğitim düzeyi açısından ise 101. Sırada yer almaktadır.

Türk toplumunda, toplumsal cinsiyet kalıp yargıları bulunmakta ve her insanın tanımlanmış toplumsal cinsiyet rollerine göre hareket etmesi beklenmektedir. Panoptikondaki gibi, Türkiye’de toplum içinde sürekli bizi izleyen ve yargılayan birilerinin olduğu hissi gerçektir. Kadınlar, erkeklerin kendilerini izlediğini, kontrol ettiğini ve üzerlerinde güce sahip olduğunu bilmektedir. “Kadın kendini sürekli izlemeli” inancı kadınlar için de geçerlidir. Ayrıca, toplum cinsiyet farklılıklarına göre şekillenmekte ve erkek egemen topluma göre kadının yerinin evi olduğu varsayılmaktadır. Toplumdaki genel kabul edilmiş algıya göre, kadınlar ev ile ilgili tüm işleri yürütmekle, çocuk sahibi olmakla, kocasının ve çocuklarının ihtiyaçlarını karşılamakla sorumlu tutulmaktadır. Bu nedenle Türkiye’de toplumun çoğunluğu iş yerlerinin kadınlar için doğru yerler olarak kabul edilmediğine inanmaktadır.

Türkiye İstatistik Kurumu (TÜİK) tarafından açıklanan Temmuz 2019 verilerine göre kadınların işgücüne katılma oranı %34,5, erkeklerin işgücüne katılma oranı ise %71,8’dir. 2021’de kadınların %38,5’i işgücüne katılmıştır ve bu da işgücüne katılma seviyesinde cinsiyet farkının %50 olduğu anlamına gelmektedir.

Gelir eşitsizliği de Türkiye’de cinsiyet ayrımcılığının bir başka göstergesidir. Toplumda hakim olan düşünceye göre erkek ekmek kazanandır, kadının geliri ona yardımcıdır. Öğretmenlik, hemşirelik, doktorluk veya hafif vasıflı iş alanları ve meslekler kadınlara uygun olarak kabul edilmekte ve kalıplaşmaktadır. STEM alanının erkeklere daha uygun olduğu düşünülmesinden dolayı STEM alanındaki kadın sayısının oldukça az olduğu gözlenmektedir. STEM’deki kadın oranının daha az olması nedeniyle, bu alanlar

erkek egemen kültürünü sürdürmekte, esnek olmayan ve ayrımcı kalma eğilimindedir.

### **3. Türkiye'de Uzay Çalışmaları ve Kadının Tarihi**

Türkiye'de uzay arařtırmalarında kadınların katkılarına ilişkin veri veya yaşadıkları deneyimler üzerine bilgiye literatürde ulařılamamaktadır. NASA'nın “Women in Space”, “Women@Nasa” bilgilendirme sitesinin Türkiye için benzeri bulunmamaktadır. Uzay alanında gerçekten önemli başarılarla imza atan birçok Türk kadını olmasına rağmen bunlardan sadece birkaçının bazı haberlerde adı geçmekte veya birkaçı uzayla ilgili etkinliklere davet edilmektedir. Nüzhet Gökdoğan, Türkiye'nin ilk kadın astronomu ve ilk kadın dekanıdır. Dilyan Eryurt, bu alanda bilinen ilk Türk kadın bilim adamlarından biridir. Astrobiyolog Prof. Dr. Betül Kaçar, NASA Genç Arařtırmacı Ödülü'ne layık görülen ve evrende yaşam arayışı çalışmaları yürüten bir bilim insanıdır. Ayrıca, Türk astronomi ve astrofizik profesörü Feryal Özel de karadeliğin görüntülenmesi üzerinde çalışan ekipte yer almıř ve “dünyanın en zeki kadınları”ndan biri olarak nitelendirilmiřtir. Astrofizikçi Burçin Mutlu Pakdil, çok nadir görülen bir çift halkalı eliptik gökada keřfetmiřtir. Bilge Demirköz, Türkiye'de Orta Doęu Teknik Üniversitesi'nde yüksek enerjili fizik profesörüdür ve Türkiye'nin CERN (Avrupa Nükleer Arařtırma Örgütü) ile ilk iřbirlięi olan Parçacık Radyasyon Testleri Oluřturma Laboratuvarı'ndan sorumludur. Avukat Nazlı Can ise, 2008 yılında kurulan İstanbul Barosu'nun Havacılık ve Uzay Hukuku Komisyonu Başkanı görevinde ciddi başarılar elde etmiřtir. Bunların yanında, Ulusal Uzay Programı kapsamında bir vatandařın Ay'a gönderilmesi hedeflenmekte ve bu kiřinin de kadın olması planlanmaktadır.

Hem akademik hem de pratik olarak uzay çalışmalarına katılan kadınlarda yıl bazlı deęiřiklikleri görmek için TÜBİTAK, YÖK gibi Türkiye için kamuya açık kaynaklardan ikincil veriler topladım.

### **3.1. Akademik Bilgiye Katkı**

YÖK'ten edindiğim bilgilerle oluşturduğum veri seti üzerinde yaptığım analizler sonucunda kadınların tez yazma ve literatüre dahil edilmiş akademik katkıları 1975 yılına kadar gittiğini gözlemledim. Uzay araştırmalarında kadınlar yüksek lisans sonrası 217 tez yazmıştır. Uzay alanında kadınlar tarafından yazılan ilk yüksek lisans tezinin 1975 yılında olduğu gözlenmiştir. Erkekler tarafından yazılan toplam yüksek lisans tezi sayısı 331'dir. Uzay alanında erkekler tarafından yazılan ilk yüksek lisans tezi 1972 tarihindir. Yüksek lisans derecesi alan ve uzay alanı literatürüne katkıda bulunan kadınlar %40'lık orana sahiptir. Kadınların uzay alanında yüksek lisanslarını erkeklerle hemen hemen aynı zamanda az bir gecikmeyle tamamlamaya başladıkları görülmektedir.

Uzay çalışmalarında doktora derecesi alan kadınlar 61 tez yazmıştır. Uzay alanında kadınlar tarafından yazılan ilk doktora tezi 1982 yılındadır. Erkekler ise doktora sonrası 107 tez yazmıştır. Uzay alanında erkekler tarafından yazılan ilk doktora tezi 1968 yılındadır. Doktora çalışmalarına katılan ve uzay alanı literatürüne katkıda bulunan kadınlar %36'lık orana sahiptir. Kadınların doktora çalışmalarına katkı oranının, yüksek lisansa katkı oranından daha düşük olduğu görülmektedir. Bunun sebebinin, doktora zamanına gelen kadınların evlilik, ev içi sorumluluk ve çocuk büyütme gibi rollere odaklanması olabileceğini düşünüyorum. Kadınların uzay alanında doktora çalışmalarına erkeklerden on dört yıl sonra girmeye başladığı görülmektedir.

### **3.2. Bilimsel ve Teknolojik Araştırma Projelerine Katkı**

Uzay alanındaki Ar-Ge projeleri açısından, TRDizin'den elde edilen bilgilerle kendi oluşturduğum veri setinin nicel analizi sonucunda 198 projenin TÜBİTAK tarafından finanse edildiği ve tamamlandığı ve proje koordinatörü olarak 34 kadın ve 129 erkeğin katıldığı görülmektedir. Kadınlar 42 proje yürütmüş ve tamamlamış, erkekler ise 156 proje yürütmüş ve tamamlamıştır. Kadınların, TÜBİTAK desteğiyle, uzay alanındaki Ar-Ge faaliyetlerine %21

oranında katkı sağladığı görülmektedir. Ayrıca, projelerin araştırmacısı olarak 438 kişinin katıldığı görülmüştür. Bu anlamda, araştırmacı olarak uzay alanında yürütülen Ar-Ge projelerine katılan toplam kadın sayısının 111, toplam katılım sayısının 130 olduğu, erkekler içinse toplam sayının 317, toplam katılım sayısının 393 olduğu anlaşılmıştır. Bir kadın proje koordinatörü tarafından yürütülen projelere 12 kadın ve 66 erkek araştırmacı olarak katılırken, erkek proje koordinatörü tarafından yürütülen projelere 89 kadın ve 327 erkek araştırmacı olarak katılmıştır.

Türkiye'deki uzay çalışmalarında, kadınların katılım düzeyinin ve katkı yüzdesinin net olmadığı bilinmekte ve erkeklerin egemen olduğu bu sektörde kadınların cinsiyet ayrımcılığı nedeniyle karşılaştıkları birçok zorluğun olduğu kabul edilebilmektedir. Bu nedenle, bu tez kapsamında “Türkiye'de kadınların uzay çalışmalarına katkıları nelerdir ve cinsiyet ayrımcılığı nedeniyle karşılaştıkları zorluklar nelerdir?” temel sorusuna cevap aramaktayım.

#### **4. Metodoloji**

Kadınların uzay araştırmalarındaki rollerini ve katkılarını analiz etmek ve anlamak, kadınların deneyimlerini ve uzay araştırmalarında karşılaştıkları zorlukları anlamak için yarı yapılandırılmış görüşmeler ve saha gözlemleri yaptım.

#### **5. Sonuçlar**

##### **5.1. Cam Tavan**

Cam tavan terimi, kariyerinde ilerlemek isteyen yetenekli bir kişinin, çoğunlukla ırkçılık ve cinsiyetçiliğe dayalı ayrımcılık nedeniyle alt kademede sıkışıp kalması anlamına gelmektedir. Kadınların daha yüksek liderlik pozisyonlarına ve yönetici rollerine ulaşmasını engelleyen cinsiyete dayalı görünmez bir engel vardır. Cam tavanın alt pozisyonlardan ziyade üst yönetim seviyelerinde daha sık meydana gelmesi kadınların orta yönetim rollerinde tutulmasına neden olmaktadır. Uzay alanında iş yapan şirketlerde cinsiyete dayalı bir cam tavanın var olduğu yapılan görüşmelerden kolaylıkla



anlaşılmaktadır. Seviye arttıkça cam tavan etkisinin arttığı da görüşmelerde görülmektedir. 13 görüşmeden yedisi, yönetici ve daha üstü seviyelerde kadın olmadığını ya da çok az kadın olduğunu belirtmiştir.

## **5.2. İşveren ve Yöneticiler Tarafından Ayrımcılık**

### **5.2.1. İşe Alım Eşitsizlikleri**

Kadınların işe alınmama sebeplerinden birisi, toplumsal cinsiyet rolleri gereğince, kadınlarından çalışmak yerine evlenip çocuk sahibi olmasının beklenmesidir. Bazen, erkeklerle çalışmanın kadınları rahatsız edebileceğine inanıldığından, tamamı erkek olan işyerleri için kadınlar tercih edilmemektedir. Aynı şekilde, iş görüşmeleri sırasında cinsiyetle ilgili kişisel soruların sorulması da kadınların sıkça karşılaştığı bir durumdur.

### **5.2.2. Terfi Eşitsizlikleri**

Terfi ayrımcılığı, erkeklerle aynı düzeyde başarı elde etmiş kadınlara terfi kararlarında ve ek eğitime erişimde farklı davranıldığında ortaya çıkmaktadır.

Çoğu şirket için terfi kararlarının yönetici tarafından onaylanması gerekmektedir. Bana göre, terfi eşitsizliğinin var olmasının ana nedenlerinden biri de budur. Cam tavan bölümünde de belirttiğim gibi yöneticilerin onayı ayrımcılık yapmayı daha da mümkün kılmaktadır. Kadınlardan beklentilerin düşük olması sebebi ile yönettikleri ekipte otorite kuramadıklarına inanılmaktadır. Kadınlara deneme şansı bile verilmemektedir. Açıkça, kadınlara karşı önyargı, terfi eşitsizliklerinin nedenlerinden biridir. Terfi eşitsizliği, kadınların terfi edilmek için daha az tercih edilmesinden dolayı üst kademelerde daha az kadın oranı ile sonuçlanmakta ve bu sebeple, kadınların yönetim kademelerindeki varlıkları adım adım azalmaktadır.

### **5.2.3. Ödeme Eşitsizlikleri**

Türkiye'de erkek rolünün, ailenin gelirinin birincil kaynağı, yani "hane reisi" olduğu varsayılırken, kadın rolünün anne ve ev hanımı olduğu, birincil

görevlerinin ev işleri olduğu ve yalnızca ikincil olarak gelir kaynağı olabileceği kabul edilmektedir. Kadınların ücretleri, erkeklerin maaşlarına ek olarak görülmekte; bu nedenle, düşük gelirleri işlerde çalışmaları ya da aynı işgücüyle daha az maaş almaları toplum tarafından sorun olarak görülmemektedir. Ayrıca, bir kadın terfi ettiğinde, ücreti yöneticinin kararına bağlı olmakta ve bu da ücret eşitsizliklerini mümkün kılmaktadır. Aynı işi yapsalar bile, kadınların rütbesi daha düşük olduğu için daha az maaş almaktadırlar.

#### **5.2.4. Tutum Eşitsizlikleri**

Kadınların bir işi tamamlayamayacağına ve erkeklere verilen bir işin yoğunluk seviyesindeki sorumlulukları yerine getiremeyeceğine dair bir inanç görülmektedir. Öte yandan, sosyal normlara ve etik tanımlanmış davranışlara inandıkları için kadınlarla tokalaşmak istemeyen erkeklerin olduğu anlaşılmaktadır. Kadın cinselliğini somutlaştırdıkları için bu da ayrımcılığın başka bir çeşididir. Erkekler, kadınların elini sıkmamakla kadınların kendilerini ifade etme fırsatını da elinden almaktadır.

#### **5.2.5. Desteklemede Eşitsizlikler**

Cinsiyet ayrımcılığı açısından, kadınların fikir ve çabalarını desteklemek ve arkasında durmak da kadınların işyerinde karşılaştıkları zorluklardandır. Akademik ortamlarda da kadınlara erkekler kadar destek verilmediği görülmektedir.

#### **5.2.6. Cinsiyete Dayalı Beklentiler**

Toplumsal cinsiyet rolleriyle ilgili kabul edilen ilk konulardan biri kadınların nereye ait olduğudur. Kadının yeri evdir; rolleri ev içindedir. Bu sınırlar içinde kadınların görevi evlenmek ve çocuk sahibi olmaktır. Bu görevler kadınların birincil uğraşı olarak görülmektedir. Tanımlanmış sınırları aşıp evden dışarı çıkarılsa toplumun, kadının ev içi görevlerini tamamlayıp tamamlamadığını sorgulamaya başladığı görülmektedir.

Kadınların kabul edilen bir diğerk rolü de temiz, saf ve düzenli olmaktır. Duygusuz ve dađınık olmak erkeklerin görevidir. Bir kadın işini düzgün, örgütlü olarak yapıyorsa, tüm bunları kadın olduđu için yaptığına inanıldığı görölmektedir. Aslında, cinsiyeti deđil, kişiliđi, misyon duygusu ve işleyişı ile ilgilidir.

Başarıyı kazananın erkekler olduđuna, başarıya giden yolda onları destekleyen ve yanlarında duranın da kadınlar olduđuna inanıldığı görölmektedir. Ayrıca, kadınlardan daha büyük başarılar elde etme beklentisi olmadığı için erkeđe verilen iş kadınlara verilen işten farklıdır.

### **5.2.7. Doğum İzni ve Sonrası Mücadele**

Anne isterse ücretli izin süresinin bitiminden sonra altı aya kadar ücretsiz izin kullanabilmektedir. Ancak bir katılımcının bu izni kullanmasına izin verilmediđi ve ücretli izin sonrası işe başlaması istendiđi görölmüştür. Bazı kadınlarınsa emzirme izniyle ilgili zorluklarla karşılaştığı görölmektedir. Annelik izni nedeniyle kadınların terfi bile alamadığına inanılmaktadır. Ayrıca, bazı şirketlerin binalarında emzirme odası bulunmamaktadır.

### **5.3. İş Arkadaşları Tarafından Ayrımcılık**

#### **5.3.1. Önemsememek**

İşyerinde kadınların erkeklerden daha az ciddiye alındığı aşikardır ve buna “Otorite Boşluğu” denilmektedir. Tam aksine, kadınların kendine güvenerek, iddialı bir şekilde, kontrolü ele alarak kalıplaşmış erkeksi özellikler göstermesi, erkekleri, tanımlanmış klasik cinsiyet standartlarına karşı isyan olarak gördükleri için rahatsız ettiđi görölmüştür. Kadınlar bu tarz davranışlar sergilediklerinde genellikle saldırgan, buyurgan ve sinir bozucu olarak olumsuz bir şekilde görölmektedir. Kadınlar, önemli başarılar elde etseler de ciddiye alınmamakta ve otorite boşluğundan dolayı takdir edilmemekteler. Uzay çalışmalarında, kadınların yeterince önemsenmediđi ve erkeklerin kadınları ciddiye almadığı açıktır.

### 5.3.2. Zamirler

Yetki boşluklarından biri adres zamirleriyle ilgilidir. Bir kadın veya erkeğe nasıl seslenilirse, seslenilene karşı tutum şekli de değişmektedir. Öncelikle işyerinde iş arkadaşlarına “ağabey” veya “abla” demek saygı düzeyini tamamen değiştirmektedir. Genelde kadınlar işyerinde “abla” olarak anılmak istememekte; ya “hanım” olarak ya da sadece kendi adlarıyla çağrılmayı seçmektedir. Adlarının zamir kullanmadan seslenilmesine izin verilmesi durumunda, saygı düzeyinin otomatik olarak düşeceği düşünülmektedir. Akademik alanda bu zamirler “hoca” ve “hanım”a dönüşmektedir. Kadın akademisyenlere “hanım”, erkek akademisyenlere “Hoca” denmesi, kadın akademisyenlere karşı büyük bir cinsiyet ayrımcılığı ve saygısız bir tavır yaratmaktadır.

### 5.3.3. Koruma

Toplumsal cinsiyet rolü olarak kadının kırılgan, zayıf ve muhtaç olması beklendiğinden, toplumda kadının erkekler tarafından korunması gerektiğine dair genel bir kanı bulunmaktadır. İşyerinde bile tartışacak bir konunun olması durumunda, kadınları korumak ve sanki kadın kendini savunamayacak durumdaymış gibi davranmak normal görülmektedir.

Ayrıca, yaptığım gözlem sonucunda cinsiyet eşitsizliğini kadınların korunması ve kendilerine zarar vermemeleri konusunda uyarılması gerekmesi şeklinde deneyimledim. İki gün boyunca bu konuda gözlem yaptım. Bir çok kişi tarafından defalarca dikkatli olmak ve kabloları basmamak konusunda uyarıldım ve en sonunda daha yaşı olan bir erkek kontrol sorumlusu beni daha genç erkek kontrol sorumlularına emanet ederek göz kulak olmalarını istedi. Ekipmanın teknik önemini anlamayacağımı ve başıma bir iş açacağımı, bir şeyleri bozacağımı düşündüğü için erkek denetimine ihtiyacım olduğuna inandıklarını gözlemledim.

#### **5.3.4. Dışlama**

Bir organizasyonda ilerlemek için, iyi bir sosyal ağ kurmak, çoğu endüstride, özellikle de uzay gibi erkeklerin egemen olduğu endüstrilerde son derece hayati öneme sahiptir. İşyerlerinde erkekler, kadınları sosyal aktivitelerden dışlayarak yabancılaşmaya, iş süreçlerinden dışlayarak işlerini yapmalarını engellemeye sebep olmaktadır.

#### **5.3.5. İş Yaşam Dengesi**

Bu çalışma sonucunda, uzay araştırmalarında kadınların daha fazla başarıya ulaşmak için çok uğraştıklarını ve yaptıkları işlerin onlar için büyük önem taşıdığı kesin kanaatimdir. Katılımcılar, öncelikleri değiştirerek, o belirli zamanda neyin gerekli ve acil olduğuna odaklanmakta ve buna uygun hareket etmektedir. İşe özel hayatlarından daha fazla önem vermeleri için kadınlara yönelik herhangi bir üst baskı ya da ayrımcılık görülmemektedir.

#### **5.4. Ev İçi Sorumluluklar**

Toplum, kadınlardan itaatkar, çocuklarına bakan, babalarının gurur kaynağı olmasını sağlayan iyi bir anne olmalarını beklemektedir. Ayrıca kadınların çalışsa bile daha az para kazandıkları için ev işlerini tamamlamaları gerektiğine inanılmaktadır. Sosyal yapısal teoriye göre, insanlar sosyokültürel baskılar veya biyolojik potansiyeller vb. nedenlerle zamanla hakim olduğu rollere uygun davranışlar geliştirmektedir. Bu durumda kadınlar bazen ev içi sorumluluklarının kendi görevleri olduğunu sorgulamadan kabul etmektedir. İşyerinde cinsiyet ayrımcılığına fiilen maruz kalan ve buna karşı çıkan katılımcılardan biri, ev içi sorumluluğun kaçınılmaz bir görev olduğunu belirtmiştir. Bazı katılımcılar da eşlerinin evdeki bir işi yapmasını kendilerine yardım olarak değerlendirmektedir. Tam aksine, bu cinsiyet rollerine katılmayan ve ev içi sorumlulukları her ikisinin de işi olması gerektiğini kabul eden kadın ve erkekler de bulunmaktadır.

## 5.5. Akademi ve Çalışmalarda Ayrımcılık

Üniversitelerin uzay bölümlerinde da cinsiyet ayrımcılığı bulunmaktadır. Bu bölümlerde kadın oranının çok düşük olduğu gözlenmiştir.

Uzay mühendisliği okuyan katılımcılardan biri sınıfta çok az kadın olduğunu belirtmiştir. Bazen öğretmenlerinin sınıfa “beyler!” diyerek seslendiğini ifade etmektedir. Ayrıca, sınıf arkadaşlarının da sınıfın erkek egemenliğinde olmasından ötürü kadınları göz ardı ederek ayrımcılık yaptıklarını belirtmektedir.

Bir katılımcı erkek egemen konuşmaların düzenli olarak gerçekleştiği ve farkında olmadan günlük bir şey haline geldiği, cinsiyet ayrımcılığı yapan bir ortamla karşı karşıya kaldığını belirtmiştir. Görüşülen kişilerden akademisyen olan bir kişi, akademisyenliğin toplum tarafından kadınlar için öğretmenliğin bir devamı olarak kabul edilmesinden dolayı akademisyenler arasında cinsiyet ayrımcılığı olduğunu düşünmediğini dile getirmiştir. Ancak kadınların fikirlerinin, projelerinin desteklenmesi ve finanse edilmesi konusunda toplumsal cinsiyet eşitsizliklerinin olduğunu belirtmektedir. Ayrıca kadınların proje başvurularında reddedilme oranının erkeklere göre daha fazla olduğu kabul edildiğinden, kadınlar bu sorunu çözmek için erkek akademisyen arkadaşlarının adı ile proje yürütücüsü olarak araştırma projelerine başvurmakta ve bu şekilde cinsiyetçi değerlendirmenin ortadan kaldırılacağı inanılmaktadır. “Kadınların ilk hedefi evlenmek” normunun akademik ortaklıklarda da cinsiyet ayrımcılığına neden olduğu belirtilmektedir. Ayrıca eğitim hayatında cinsiyet ayrımcılığının dünyanın her yerinde olduğu tespit edilmiş ve aslında Türkiye'den çok daha kötü olduğu görülmüştür.

## 5.6. Cinsiyet Ayrımcılığı Deneyimlememe

Katılımcıların bir kısmı işyerinde veya eğitim ortamında kendilerinin ayrımcılık yaşamadığını, sadece bazı eşitsizliklere tanık olduklarını veya farklı kişilerden gerçek hikayeler duyduklarını belirtmektedir. Bazı kadınlar pek çok yerde erkek egemenliğiyle karşı karşıya kalmaktadır ve kadınlar farkında olmadan bu duruma yavaş yavaş asimile olmaktadır. Erkek egemen ortamlar ve

bu tür yerlerin genel özellikleri bu kadınlar için normalleşmektedir. Bu durum ve ortamları kendi içlerinde normalleştiren kadınların erkeksi tavırlar benimsemeye başladığı gözlenmektedir.

### **5.7. Pozitif Ayrımcılık**

Uzay çalışmalarında, kadınların pozitif ayrımcılığa maruz kaldıkları ve hatta bazen farklı muamele görmeyi bekledikleri bu çalışmada karşımıza çıkmaktadır. Bazı kadınlar ev içi sorumluluklarını gerekçe göstererek fazla mesaiyi veya yoğun işleri kabul etmemektedir. Bazı durumlarda kadınların erkeklerden farklı muamele görmek istemedikleri halde erkekler veya kadınlar tarafından ayrıcalıklı davranılabildiği gözlenmektedir.

### **5.8. Şanslı ve Minnettar Olmak**

Bu çalışma sırasında başka bir zihin yapısıyla karşılaştım. Eğer bir kadın cinsiyet ayrımcılığı yaşamaz ve diğerlerinin kendisinden toplumsal cinsiyet rollerine uygun davranmasını beklemediğini hissederse kendini “şanslı” saymakta ve “şükürler olsun” diyerek teşekkür etmektedir. Aile bireylerinden evlenme baskısı görmemek, eşinin ev işlerine yardım etmesi, ev işlerinin ortak iş olarak kabul edilmesi, iş yerinde çok fazla ayrımcılığa uğramamak, bir kadınla aynı takımda çalışabilmek, aynı takımda cinsiyetçilik ile karşılaşan bir başka kadın varken onun bu ayrımcılığı yaşamaması şanslı görülebilecek, şükür edilebilecek sebepler arasında değerlendirilmektedir.

## **6. Politika Tavsiyeleri**

### **6.1. Kadın Sayısının Artırılması ve İşgücüne Erişim**

Kadın istihdamını artırmak için doğru tasarlanmış maliye politikalarının çok önemli olduğuna inanıyorum. İlk olarak, kadınları uzay alanına daha fazla girmeye teşvik etmek için özellikle uzay alanındaki kadınlar için vergi takozu azaltılabilir. İkinci olarak, aile yardımı sistemlerinde reform yapmak ve çocuk bakımında devlet yardımları sağlamak, özellikle çalışan anneler olmak üzere kadınların işgücüne katılımını artırabilir. Uzay alanında çalışan annelerin aile

bütçesinden çekinmeden çalışma hayatına dönmelerini teşvik etmek ve maddi anlamda daha kolay bebek bakıcısı sağlayabilmeleri için çocuk bakımında devlet yardımları sağlanabilir. Üçüncüsü, uzay alanında faaliyet gösteren devlet kurumları ve özel sektör, kuruluşlarında belirli bir kadın çalışan yüzdesine ulaşabilirlerse teşvik edilebilir.

Cam tavanı kırmak için, üst düzey yönetici pozisyonlarında, kurullarda vb. belirli kadın yüzdesini belirleyen yasalar olabilir. Ayrıca, kadınların özel sektörde yönetim ve karar alma organlarına daha fazla katılımını sağlamak için bilinçlendirme ve özendirme yöntemleri uygulanabilir. İnsanların cinsiyet ayrımcılığı konusundaki bilgilerini artırmak için akademisyenlerden ve uzmanlardan profesyonel dersler alınabilir, vaka çalışmaları ve gerçek hayattan örnekler gösterilerek toplumsal cinsiyete dayalı ayrımcılığın ne kadar acınası bir durum olduğu daha açık hale getirilebilir. Bu durumda özel sektörlere profesyonel destek alınması için teşvikler sağlanabilir.

Bir diğer öneri de uzay alanında çalışan kadınların işe alım maliyetlerinin düşürülmesi olabilir. İstihdamın korunması mevzuatı nedeniyle, özel şirketler için hem işe alma hem de işten çıkarma maliyetlidir. Cinsiyete dayalı beklentiler nedeniyle erkek aday seçmek kadın aday seçmekten daha güvenli hissettirmektedir. Bu maliyetler düşürülürse kadınlara daha çok şans verilebileceğine inanmaktayım.

Tüm bunlara ek olarak devlet kurumları için de toplumsal cinsiyet denetim prosedürlerinin tanımlanabileceğini ve sorumlu kurumların belirlenmesi gerektiğini düşünüyorum. Bu kurumlara, uzay alanındaki devlet kurumlarını ve özel sektörü cinsiyet eşitliğine dayalı politika, operasyon ve hizmetleri uygulayıp uygulamadıklarını periyodik olarak kontrol edecekleri yetkiler tanımlanmalıdır. Ayrımcılıkla mücadele mevzuatının benimsenmesi sağlanmalı ve sürdürülmelidir. Ayrıca, cinsiyet eşitsizlikleri açısından kadınların en büyük sorunlarından biri olduğu için terfi süreci ve prosedürleri de kontrol edilmelidir.



## **6.2. Kadınları Farkındalık ve İlgi Artırmaya Teşvik Etmek**

Türkiye okul öncesi eğitimde cinsiyet eşitliğini neredeyse yakalamış olsa da, eğitimde büyük bir cinsiyet eşitsizliği bulunmaktadır. Bu engelleri ortadan kaldırmak ve uzay alanında kadın sayısını artırmak için bazı kamu politikaları tasarlanabilir. Eğitimdeki kalıp yargılar nedeniyle hem eğitimde hem de işgücü piyasasında cinsiyet ayrımcılığı mevcuttur. İşgücü piyasasındaki cinsiyet eşitsizliğini ortadan kaldırmak için kız ve erkek öğrencilerin cinsiyete dayalı eğitim ayrımının ortadan kaldırılması gerekmektedir. Bu durumda, kadınların uzay alanına ilgilerini artırmak ve özgüvenlerini arttırmak için sürdürülebilir değişiklikler yapılması gerekmektedir. Başta kız öğrenciler olmak üzere, öğrencilerin ilgili dallarda eğitimlerini sürdürerek uzay alanında yer almalarını teşvik etmek için uzay alanında hem devlet kurumları hem de özel şirketler tarafından özel etkinlikler düzenlenebilir. Kız öğrencilerin sorularını yanıtlayarak, ilk adımı atmaya istekli oldukları sürece istedikleri her şeyi başarabileceklerini anlatarak ve toplumsal cinsiyete dayalı sorunlarını çözmeye odaklanan farklı şirket ve kurumlardan kadın mentorlar görevlendirilebilir.

## **6.3. Uzay Endüstrisinde Farkındalık Artırma Etkinlikleri**

İşyerlerinde kadınlara yönelik cinsiyet ayrımcılığının ortadan kaldırılması için bilgilendirme etkinlikleri, kadınların görünürlüğünü artırmaya yönelik destekleyici hareketler yapılabilir. Kadınların her türlü cinsiyete dayalı ayrımcılık konusunda şikayet hakkının önceden korunması ve garanti altına alınması gerektiğini düşünüyorum çünkü kadınlar terfi alamamaktan şikayet ettiklerinde daha fazla zorlukla karşılaşmaktan korkmaktadır. Kadınların haklarının neler olduğu, bu tür toplumsal cinsiyet temelli zorluklarla nasıl baş edebilecekleri, olası çözümlerin neler olduğu vb. konularda bilgilendirmek için periyodik olarak özel etkinlikler ve bilgilendirme panelleri yapılması gerekmektedir. Ayrıca erkekleri ve karar vericileri var olan ayrımcılık, sonuçları ve şirket üzerindeki olumsuz etkileri vb. konularda aydınlatmak için bilgilendirici etkinlikler düzenlenmelidir. Ayrıca işe alım sürecinde “Cinsiyete dayalı hiçbir ayrımcılık faaliyetinin parçası olmayacağım, hiç kimseye cinsiyet,

irk ve din ayrımı yapmayacağım” ibaresini imzalamanın caydırıcı olabileceğine inanıyorum.

#### **6.4. HeForShe Hareketini Desteklemek**

UN Women tarafından 2015 yılından bu yana Türkiye'de yürütülen “HeForShe” kampanyası, dünya çapında toplumsal cinsiyet eşitliği için dayanışmaya odaklanmaktadır. Bugün Türkiye'de HeForShe için 40.224 taahhüt bulunmaktadır. İşyerinde ve eğitimde cinsiyet ayrımcılığının önüne geçebilmek için sadece kadınların çabası yetmeyeceği için, herkesin toplumsal cinsiyete dayalı eşitsizlikleri ortadan kaldıracak adımlar atması ve kadınları da desteklemesi gerekmektedir. Uzay alanında, çeşitli özel şirketler, üniversiteler ve devlet kurumlarından erkekler bu kampanyanın bir parçası olabilir ve daha fazla bilgi edinebilir, kadınları teşvik etmek, desteklemek ve sürdürülebilir toplumsal cinsiyet eşitliğine ulaşmak için toplumsal cinsiyete duyarlı politikalar oluşturma konusunda gerçek hayattan örnekleri ve çözümleri görebilir.

#### **6.5. Ödeme Eşitsizliklerinin Ortadan Kaldırılması**

Kadın ve erkeklerin çoğunluğu, daha fazla kadının çalışma hayatına katılmasıyla cinsiyetler arasındaki ücret farkının azalacağını düşünmektedir. Kadın sayısını artırmak, nihayetinde ödeme eşitsizliklerini durdurabilir.

İlk olarak, ödeme politikaları ve şirketin yapısını kontrol etmek ve herhangi bir ayrımcılık olup olmadığını görmek için işverenlerin maaşlarını analiz etmek için belirli kurumlara denetim sorumluluğu verilmelidir. İkincisi, terfi etmek maaş eşitsizliği üzerinde bir etkidir. Değerlendirmelerin önyargısız ve cinsiyete dayalı ayrımcılık yapılmadan yapılmasını sağlamak için uzay araştırmalarında özel şirketlerin değerlendirme politikalarının geliştirilmesini önerebilirim. Ayrıca, erkeklerle aynı iş ve sorumluluklara sahip, erkeklerle eşit veya daha fazla çalışan kadınlar için farklı vergilendirme politikaları uygulayarak net gelir düzeyi erkeklerle aynı düzeye çekilebilir. Bu durumda farklı şirketler ve roller için özel vergilendirme politikaları uygulanmalıdır, fakat bu politikanın uygulanması zorlayıcı olabilir.

## **6.6. TÜBİTAK'ın Desteklediği Kadın Projelerinin Artması**

Yapılan görüşmelerde, TÜBİTAK'ta Bilimsel ve Teknolojik Araştırma Projelerine başvuran projeler arasında kadın koordinatörü olan projeye finansman kararı verilirken cinsiyete dayalı bir karar mekanizması kullanıldığı sonucuna vardım.

Bilimsel ve Teknolojik Araştırma Projelerinde kadın sayısını artırabilmek ve toplumsal cinsiyet eşitsizliğini ortadan kaldırmak için özel bir kamu politikası tasarlanabilir. Kadınları ön planda tutan yeni finansman sisteminin etkili olacağına inanıyorum. Karar mekanizması, cinsiyete dayalı incelemelerin neredeyse olmaması için geliştirilmelidir. Ayrıca başvuru sahipleri arasından özellikle koordinatör olarak seçilecek kadınların yüzdesi belirlenebilir. Daha fazla kadını kararlarını projelere dönüştürmeye teşvik etmek için uzay araştırmaları için kampanyalar yapılabilir.

## **6.7. Annelik İzni Sorunlarının Azaltılması**

En büyük adımlardan biri doğum iznine ilişkin mevzuatın geliştirilmesi ve her iki ebeveynin de izin hakkı ve çocuk bakımından sorumlu olması için yeniden tasarlanmış ebeveyn izni sisteminin oluşturulmasıdır. Ayrıca, cinsiyetten bağımsız bir dil ve sistem elde etmek için kavramı “doğum izninden” “babalık iznine” değiştirmek olmalıdır.

Kadınların uzay alanında çalıştığı her binada yeterli sayıda emzirme odasının bulunması özel şirket ve devlet kurumlarının politikalarına dahil edilmelidir. Küçük çocuğu olan anneler için esnek çalışma saatleri politikasının uygulanabileceğine inanıyorum.

Sonuç olarak, uzay çalışmalarında cinsiyet ayrımcılığını çözebilmek için yeniden tasarlanmış ve geliştirilmiş kamu politikaları, maliye politikaları, özel etkinlikler ve odak noktaları önererek kadın sayısını ve işgücüne erişimini artırmayı, daha yüksek düzeyde kadın sayısını artırmayı önermekteyim. Latour'un dediği gibi “hepimiz karmaşık ve birbirine bağlı bir sistemin parçasıyız”. Bu nedenle, bir teori sadece bir eşitsizlik faktörüne odaklanır ve

diğerlerini görmezden gelirse, etkili olmayacaktır. Tüm ađ birbirini etkileyecek ve sonunda bir eđsizlik daha da büyüyecek ve bu da diğer aktörleri etkileyecek pek çok şeye neden olacaktır. Bu nedenle uzay alanında cinsiyet ayrımcılıđının ortadan kaldırılmasına yönelik farklı problemler, kasıtsız eđsizlikler ve mutsuzluklar yaratmadan en etkili politika ve çözümlere ulaşabilmek için etki analizi ve daha ileri çalışmalar yapılmalıdır.

## E. THESIS PERMISSION FORM / TEZ İZİN FORMU

### ENSTİTÜ / INSTITUTE

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