## STP Worksheet

**S**- Situation **T**- Target **P**- Plan

Attempts at delegation and action planning often fail because there is a lack of alignment on the definition of the situation. Furthermore, rarely do people clearly agree on the target state priorto formulating an Action Plan. Attaining agreement on ***what*** the situation and the ideal target state are, ***before*** attempting to discuss ***how*** to get to the target state will ensure solid Action Plans. When Action Plans are also developed by the people responsible for the results, the commitment to the plans will be higher and the opportunity for success significantly increased. If the endeavor is delegated, it’s important to check that there is agreement on the situation and the target with key interested parties, before implementing the Action Plan. This ensures that the Action Plan will be supported and deliver the results desired.

### Hurdle or Barrier we are addressing:

Team 11 will work on a project about gender and diversity in aerospace to investigate what differences exist between men, women, and gender distribution rates in aerospace. Understanding trends and patterns between men and women in aerospace will help companies involved in STEM to plan and prepare in advance to hire employees equally without prejudice to gender and race when hiring them. This STP document outlines the steps required to access a given business question to complete the project.

## S - Defining the Situation:

Ask questions beginning with what, when, where, why, who and how. For example: How is it affecting our customers, employees, financial results, competitive position, teamwork, communications and the quality of our products/services? Include facts, opinions, beliefs, feelings, hunches, and assumptions. Feelings and beliefs are valid, just because someone feels them. Only facts can be debated and tested. If there is disagreement on facts or significant facts are unknown, the action plan can include an information-gathering step.

**Business Requirements:**

Upon completion, our teams gender and diversity in aerospace analysis will attempt to answer or bring insight to the following questions

**1. What is the ratio of women to men in aerospace?**

This part of the analysis focuses on identifying gender ratios based on aerospace workers. The data provides information about the year, industry, and gender. Our goal is to explore this data in order to determine whether there is a gender imbalance in the aerospace industry numerically and to identify trends in gender ratio changes by year. However, the data must include at least 2 or more years to calculate the gender ratios by year.

**2. Is there a difference between men and women graduating from STEM fields in aerospace?**

In most cases, people get a job at a company that has nothing to do with their major after graduating from college. Therefore, this part of the analysis focuses on identifying the rate of graduation in the STEM field by men and women based on aerospace industry workers. The given data provides information about genders and graduating majors. The goal is to explore this data to identify patterns (relationships) between gender and major workers in the aerospace industry.

**3. Is there a difference in how women and men are treated in aerospace (including by race)?**

In the current STEM field of society, treatment by gender and race is significantly different. According to a report, "STEM workers often earn more than other workers, but the average STEM worker has a significant wage gap by gender, race, and ethnicity" (Fry, R et al., 2021).[[1]](#footnote-1) Therefore, this part of the analysis focuses on identifying the different characteristics by race and gender in the aerospace industry. The data that will be analyzed provides information about the industry, gender, race, wage, position, and promotion opportunities. The goal is to explore this data to see if there is discriminative treatment by race and gender in the aerospace industry. Existing studies have explored this issue; however, our team plans on comparing other variables as well including managers vs. non-managers, technical fellows vs. “not-fellows” and evaluate any correlation.

**4. Does workplace productivity change based on the ratio or treatment of women within the workplace?**

In most cases, gender ratios are disproportionate in the workplace. This also affects the profitability of the workplace. According to the article, "the most gender-diverse companies are 21% more likely to experience above-average profitability" (Meta.).[[2]](#footnote-2) Therefore, this analysis focuses on the returns of companies based on gender ratio. The data provides information about the workplace, gender, and corporate earnings. The goal is to explore this data to find out how gender diversity affects companies.

**5. Predictions and projections of the number of female employees in the STEM fields in the next 10 years.**

Currently, efforts are being made in the STEM field throughout the United States regarding recruitment. According to the report, “women’s representation in our workforce increased to 23.2% in the United States and 24.6% internationally, both because of hiring efforts and stronger retention” (Boeing.).[[3]](#footnote-3) As such, companies in many regions are currently striving to correct the gender ratio balance in hiring. Therefore, this analysis focuses on the number of female employees in the STEM field over the next 10 years. This will help companies in STEM plan and prepare in advance to fill the recruitment quota and provide equal opportunities for gender diversity in recruitment. To this end, we plan to create an ARIMA model, a type of time series prediction. However, it needs year data to calculate the forecast and must contain at least two-year data.

## T- Identifying the Target:

What is the ideal state? It’s the end of the assignment and we’ve done a great job, what does that look like? What outcomes or results are we looking for? **Check that for every point under the situation, there is a point under the target that addresses the issue.**

**1. What is the ratio of women to men in aerospace?**

It can be seen whether there is a gender imbalance in the aerospace industry, and the rate of change in gender ratio by year can be identified. The expected state is that there are a lot more male employees than female employees in aerospace. Furthermore, we can compare these same ratios through the lense of managers vs. non-managers as well as technical fellows vs. non-fellows.

**2. Is there a difference between men and women graduating from STEM fields in aerospace?**

It is possible to understand the employment rate of STEM graduates of each gender in the aerospace industry. This can determine whether there is a gender bias in employment in the aerospace industry.

**3. Is there a difference in how women and men are treated in aerospace (including by race)?**

Identify different characteristics by race and gender in the aerospace industry. This helps us understand how people are treated according to race and gender in the aerospace industry. There are expected to be differences in wages depending on race and gender.

**4. Does workplace productivity change based on the ratio or treatment of women within the workplace?**

Focusing on workplace profits, it is possible to understand how gender diversity affects workplace profits.

We expect that there will be more profits from workplaces with more balanced gender than workplaces with disproportionate gender.

**5. Predictions and projections of the number of female employees in the STEM fields in the next 10 years.**

Companies related to STEM have a predictive model that helps them grow into a gender-equal society by predicting the number of female employees within the next 10 years. The number of female employees in the STEM field is expected to increase in the future.

## P- Plan

Action Planning Worksheet

**Date:** 14 February 2023

**Champion**: Ashlyn F Montgomery, Julian Ubaldo Rangel, Kameron L Galm, Nam Jun Lee

**Team:** Team 11

**Given the Situation and Target, our goal is**

Given the situation and objectives, our goal is to identify the patterns and differences between men and women in the aerospace sector so that overall STEM-related workplaces can hire employees equally without gender and race bias prior to recruitment.

**Why this goal is important *OR* (CSF(s) it addresses:**

Currently, there are many problems and complaints about employment and treatment by gender in STEM workplaces. Therefore, the goals we set are important because achieving this goal will help create an inclusive environment in STEM-related workplaces and a culture in which individuals are respected.

**Measurable Result (How we’ll know it’s successfully completed)**

The measurable result is that men are currently treated better and are more employed than women in the STEM fields, and there is also a significant difference in wages due to race. If the number of female employees employed in the STEM field has increased in the future, it can be said that the goal has been successfully completed.

## Action Steps:

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| **What** | **By When** | Who |
| -Decide if we want to proceed with the data given so far or figure out if we want to collect more data.  -Research existing methods for compiling unstructured data (pdfs) into structured data that can be analyzed in R | 02/19/2023 (Week 6) | Team 11 |
| -Clean and finalize our data in order to have it ready for analysis, if possible, start the Exploratory Data Analysis/Data Mining to help identify some characteristics between genders in STEM fields, but we will have a focus on the Aerospace field.  -Start working on the Data Flow Diagram. | 02/25/2023 (Week 7) | Team 11 |
| - Continue working on the EDA/ Data Mining and try to have a finalized set of data in order to start running it through data analysis.   -Finish the Data Flow Diagram  -Initialize R markdown document | 03/04/2023 (Week 8) | Team 11 |
| - Begin working on the Shiny web application | 03/11/2023 (Week 9) | Team 11 |
| -Run the data through various Data analysis methods to start answering our questions from Target to see how we are completing our goal.  -Build a model that will forecast the possible number of hirings in the next couple of years. | 03/18/2023 (Week 10) | Team 11 |
| -Summarize the results from our analysis that show possible characteristics that might be different between genders. Then discuss what it might be due to.  - Discuss if our forecasted model and our results meet the Business requirements. | 03/25/2023 (Week 11) | Team 11 |
| -Rework any details if necessary  -Start work on Presentation and decide how we are going to be presenting insights found. | 04/25/2023 (Week 12) | Team 11 |
| -Finish Presentation  -Practice Presentation | 04/31/2023 (Week 13) | Team 11 |
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### Questions:

*Are the Actions ordered to provide the most significant impact as early as possible? Is there a significant benefit to the company if a partial solution is implemented first, and refinements added later?*

Since the goal of our project is measured over time, it will be difficult to try to refine it right away. So, we can present the results we find in our data at the end of the project and then let the company decide how they want to go about implementing solutions.

**% Chance of Success**  ***Or***  **foot toss**

**Possible Major Barriers to Success**:

It is necessary to know the accuracy of the data and the existence of available variables for the set goals, and the preprocessing step to organize and analyze the data is likely to take a lot of time. There is a risk of inaccuracy that results in constructing the model through time series predictive analysis. Risk factors that may arise in data analysis are always present and may not provide results for the goals we have set. Additional barriers to success will be overcoming the new technology being leveraged in this project. This includes the Shiny R package used to create our web application and text-analysis logic to transform our unstructured data into structured data that can be effectively analyzed.

### Help Required:

Team 11 meets regularly with our mentor to discuss unresolved issues and needs assistance.

**References**

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2. Meta. (n.d.). *7 benefits of gender diversity in the Workplace*. Workplace from Meta. Retrieved February 9, 2023, from https://www.workplace.com/blog/diversity-in-the-workplace [↑](#footnote-ref-2)
3. Boeing. (n.d.). *Soaring Higher, Together 2022 Global Equity, Diversity & Inclusion Report*. Retrieved February 9, 2023, from https://www.boeing.com/principles/diversity-and-inclusion/annual-report/index.page [↑](#footnote-ref-3)