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Disappearing Women Between College and STEM Leadership

Katie Nelson

Thesis

Dr. Dente

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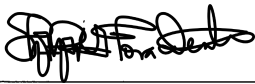
Mississippi University for Women

Disappearing Women Between College and STEM Leadership

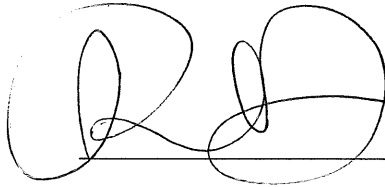
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Abstract

STEM is an evolving and ever-growing world with innovations in technology being designed. With the evolution of technology comes assessing the people developing the technology. The people creating and working in technology evolving and growing with diversity? We will look at one aspect of diversity with women to see how they have advanced in STEM. Women have increased in working on college degrees in STEM. We will evaluate the progress of women in the STEM leadership role. With research on women moving into leadership in STEM and what challenges women could be facing working in STEM.

Chapter 1: Introduction

When evaluating women in the STEM field, the path they are on to leadership into STEM leadership is fascinating. Women in STEM either have made a path into leadership on their own, are currently on a track into a leadership role, or have evaluated options other than leadership. With no defined way into STEM leadership, a gap has formed between women leaders in STEM, from graduating from college with STEM degrees to being STEM leaders. Where do women go after graduating college with STEM degrees? Currently, it is showing that there is a low percentage of women's leadership in technology compared to the number of women pursuing technology degrees is growing. What is preventing women from moving into leadership roles in technical fields? One of the concerns is that it is a new area still evolving and could challenge women's leadership in technology.

The topic is essential for the growth in technology to be profitable, have a different thinking style, and move technology into the future. Currently, there is a steady growth of women pursuing STEM degrees. The concern is a small percentage of women making it into STEM leadership. Women have increased going to college and into the workforce since the 1970s. Why are so few women moving into leadership in technological areas? Women are pursuing and achieving STEM degrees, but the numbers are so few moving into higher roles in an organization. The research concern is the need for more women to pursue leadership in STEM.

Research Studies

Education

The lack of women pursuing a STEM profession has been a concern in the past, but it has seen a small, steady growth. There is growth in women moving into science and engineering

degrees. The steady increase in women has increased enrollment from 1960 to 2004 in technical fields. There is a steady increase in the profession in STEM in India. An example is engineering and technology in the 1960s, with only 0.8% enrollment compared to 23.1%, and an increase of 22.3% in 44 years (Beura, 2017). The research brings up how lacking women are in developing countries in STEM.

In the Role

Women in STEM professions in the early 1990s and the lack of role models they have to look up to in the profession are helping lay a stronger foundation for women in STEM. The concern is the lack of positive role models for women in STEM. The research brings up a baseline of role models for women in the early 1990s and that positive role models for women are beneficial in the field of STEM. The study shows how the technical fields have changed for women in leadership in the last 30 years (Grundy, 1996).

Path

Career perspectives of looking at data and education can make companies more profitable due to their thinking. It also helps bring up mentoring and women working with other women. The data on women's leadership shows how women have increased in the field since the 1970s and progressed over the last decades (Wilén-Daugenti, Vien, & Molina-Ray, 2013). What has worked in the past will not work in the future for women moving into leadership. The new core skills have changed from 2015 to 2020. It is interesting to see that in 2015, creativity skill was number 10 on the list and moved to number 3 in 2020 (Mendoza, 2019).

Leadership

Women in STEM fields have progressed, slowly increasing women in leadership roles. Due to the small percentage of women in leadership in technology, the individual success stories of women who have moved into leadership roles help others find a path to success. It is also helpful to see how different STEM fields have embraced women to progress in this ever-evolving area (Wagner, 2020). In telecommunications, 9.5% of women hold CEO positions in telecom (Sey, A., & Hafkin, N. 2019).

Other Countries

Countries outside the United States are seeing an increase in women participating in the STEM firm's ownership at 47% in Oceania. The research from the United Nations University Institute on Computing and Society is reliable about STEM research (Sey, A., & Hafkin, N. 2019). The difference in gender gaps between men and women in the STEM field could be from family responsibilities regarding training to technology exposure. The research shows the gender gap by country as well as technical skills. The Internet may help decrease the STEM gap between women in the future (Organisation for Economic Co-operation and Development, 2018).

The data is interesting to see how organizations have women on the board of directors by country. It does not break it down from technical organizations to non-technical, but it shows how small the percentage is overall in the world (Kemp, 2020). It also shows how different areas have increased women on the board of directors.

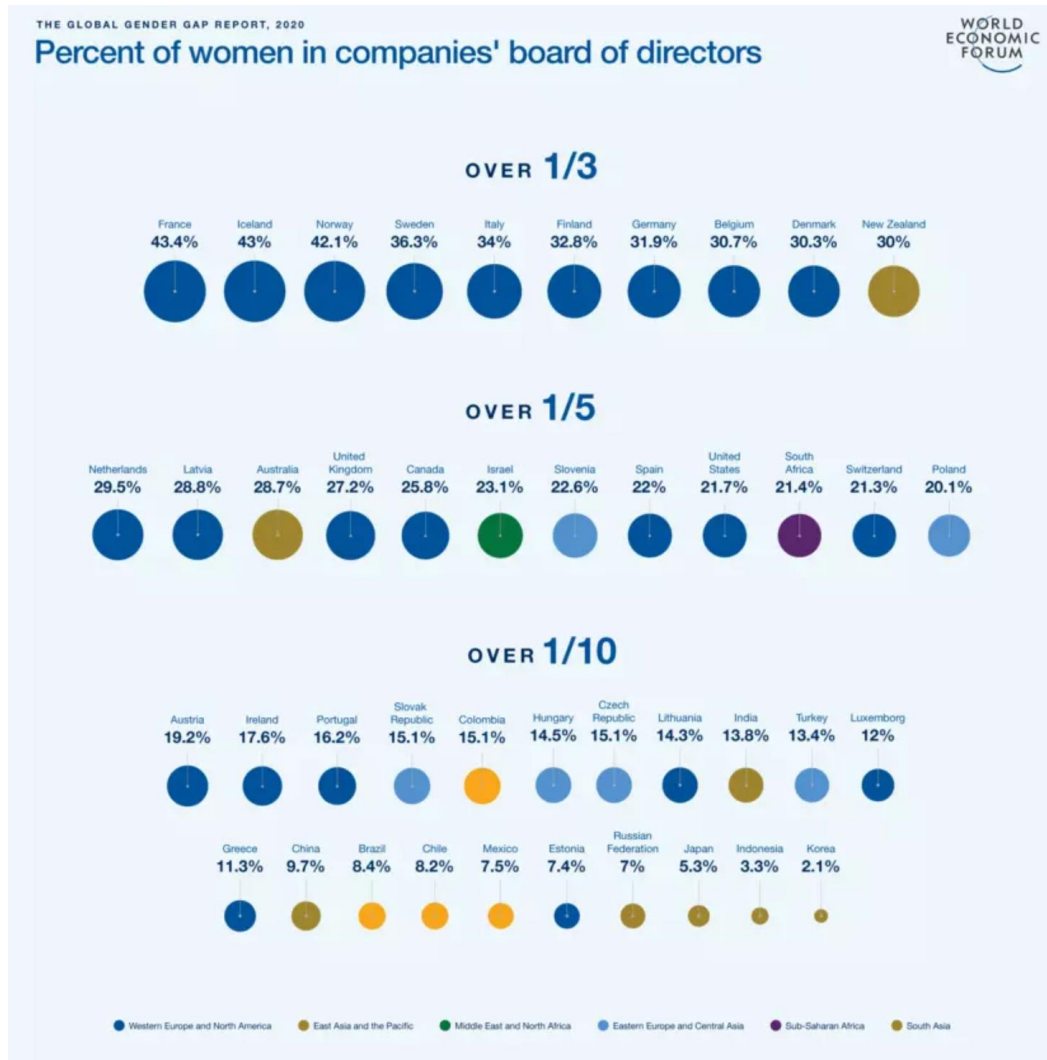


Figure 1 Percent of women on companies' board of directors

The lack of female leadership concerns young women pursuing leadership roles in technology. Currently, 20% of tech companies in the UK do not have women on the board. It brings up the challenge of female leadership's lack of role models research shows how global women's leadership is a concern in other countries besides the United States (McDonald, 2017).

Gap

The gender diversity gap in the STEM field is noticeable after evaluating the research. Women pursuing STEM degrees are decreasing and have resigned significantly over the last

twenty years. Why is there a gap between women in women graduating with a STEM degree to moving into STEM leadership? It shows that women are far behind in the area and that changes must be made to reduce the gap. It helps that there are barriers that women face in the STEM field. The research brings to reduce the gender gap through four main actions. The actions are encouragement and support, professional networking, and increased visibility of female role models. Women in the field are encouraging and supporting each other in the technical field to be successful. The research investigates the quantitative and qualitative data of women graduating with a technical degree. The survey data showed that a 33% lack of role models is an issue for women pursuing STEM. Research shows that 42% lack role models for STEM women (Botella, Rueda, Lopez-Inesta, & Marzal, 2019).

Chapter 2: Review of Related Literature

Education of Women in STEM Professions

It is an exciting time to walk into a classroom in higher education. For women to step into a classroom, there are other challenges. Women started with access to higher education in 1965. Women had to step up the pace compared to men in the STEM field years before. Bailey (2022), in the “The State of Women in Tech 2020,” brings education growth into STEM fields of education. Women in STEM have fewer degrees than in the mid-1980s, from 37% to now only 18%. Engineering has fewer women in the field, with 19% of engineering graduates and 17% of engineers being women in the workforce. The change from the 1980s to 2022 is a concerning decrease within the field.

Wilen-Daugenti et al. (2013) examine in “Women Lead Career Perspectives from Workplace Leaders” how women increased in the field from the 1970s and have progressed over the years in the field of STEM. One woman that highlighted women in STEM was Sally Ride.

John (2020) gives us an in-depth look at Sally Ride as a leader of women in STEM, being the first woman in space. Being an astronaut put her on television and in the news, which made her noticeable to other women. She was part of two missions into space until the Challenger explosion in 1986. With the Challenger explosion, NASA put going to space on hold for two years. During this time, Ride was put into the role of the presidential commission to investigate the explosion. Sally Ride went on to help show other women that being in a STEM field was possible. She leads by opening the eyes of female students to learn about space. She navigated into being an astronaut, as well as how she helped others pursue learning about science.

Grundy (1996) states in “Women and Computers” that women see computer science as a man’s world and that the environment is a concern for women working in the profession. The concern was the treatment women would face in the workplace in the 1990s as women graduated from school and moved into STEM. The lack of role models for women to look up to in STEM roles, specifically leadership, affects future generations of women to stay in STEM. The Lean In Foundation was started to have positive role models in the STEM profession. Noticeable to Sheryl Sandberg (2013) in “Lean In” how working at Google, changes were made to accommodate women in the workforce at a Tech company for parking places for expecting moms. Something so small as a parking spot or a place to pump after having a baby is an enormous step for women working in STEM.

The concern is retaining women once in technology and then having them progress into moving into leadership roles in organizations. According to The National Center for Women Information Technology (2016), in “National Center for Women Information Technology,” nearly half of the women working lack mentors, and 84% lack a sponsor to make their accomplishments visible. The women considered that the lack of support excluded them from

advancement. Ethnicity is also a concern with women, specifically in computing occupations of STEM. Overall, of 25% of women in the field of the 25%, only 3% are African American Women. The concern is troubling when you look at women leaving to go to non-STEM professions is as high as 56%.

Female leadership is not an issue only in the United States but also a global issue. McDonald (2017) claims in “The Power of Stem Role Models” that 20% of tech companies in the UK do not have women on the board. The lack of female leadership is a concern for young women starting in the field pursuing a leadership role in technology. Without more Sally Ride and Sheryl Sandbergs mentoring, future women will struggle to move into women’s leadership in STEM.

After College Graduation

After the tassels are hung on diplomas on the wall from college, a woman’s role changes from being a student to working in a STEM profession. Ashcraft et al. (2016) discuss in “Women in Tech: The Facts” what happens to women in the STEM field that is not studied or explored in the classroom. With the growing number of graduates, the concern is what is happening to women after leaving an organization in the technical field. Women, instead of working for large organizations, are turning to start-up successful IT start-up companies. Women are also growing in start-up companies by moving into senior positions. In 2016, the diversity of women in the STEM field concerned, with African American women only holding three percent of IT positions. The lack of women in the technological field is noticeable and even more noticeable with the lack of African American women.

Women are showing steady growth in moving into science and engineering degrees Beura (2017) shows in “The Gender Gap in Science and Technology” that there is growth in

women moving into science and engineering degrees. The steady increase in women has increased enrollment from 1960 to 2004 in technical fields. There is also a steady increase in the profession in STEM in India. The research highlights the gender gap with the lack of professional opportunities for women in STEM. The concern is the lack of women in STEM in developing countries worldwide.

Beura (2017) gives an example of the increase of women pursuing engineering and technology in the 1960s, with only 0.8% enrollment compared to 23.1% and an increase of 22.3% in 44 years. The rise in STEM shows that women are becoming interested in STEM. Women are becoming educated in STEM and finding a pathway into technology at a younger age, then starting in the work field. Learning at a younger age is helpful because women are exposed to STEM to be stronger in the field they want to work in.

Beura (2017), also explores data about women in scientific researchers' fields worldwide and how a few countries are much higher than in other countries the data was provided. The research explored women pursuing STEM, which steadily increased over time. The data shows that it contributes to the field at a constant rate and that with more technology opening doors, it will increase the degrees being pursued by women. The information was relevant and necessary to show a base of women looking at STEM education in undeveloped countries to follow a technical field position later and possibly grow into leadership roles.

The Organization for Economic Co-operation and Development (2018) in "Bridging the Digital Gender Divide Include, Upskill, Innovate" brings insight into one concern of gender gaps between men and women in STEM: women's family responsibilities. With family responsibilities, women have less time for training to technology exposure. To reduce the gap,

women must learn to balance family responsibilities with their education. The internet may help decrease the STEM gap between women in future education.

McCloskey (2015) brings in with their work in “Clearing the Way for Working Women” a perspective of women no longer working due to marginal tax rates and bringing in the perspective of the cost of childcare, transportation, and being in a higher tax bracket due to marriage. In this scenario, women lose money by working instead of being successful in a career in STEM. The scenario is even more noticeable with low-income families and federal funds being handled. Childcare has become so costly that women in STEM leave work until their children are of school age before returning to work. Ways to change the process include giving low-income teenagers cash bonuses to receive high-school diplomas. Another is paid maternity leave for all women in the United States.

COVID-19 vs. Women in STEM leadership

Aspan & Hinchliffe (2021) in “Is America Giving up on Working Women” reveals that in early 2020 women outnumbered men in the workforce in the United States. COVID-19 was racing across the United States as well as around the world. In the first full year of the COVID-19 pandemic hitting the US, 5.4 million women were no longer working. The factors in stepping away from working were lack of childcare, the flexibility of work, and business closing. The pandemic exposed gender inequality, with four times the number of women versus men who left the workforce when school started in September. Women had to choose between working and caring for their families during the pandemic. Women had to help with schooling the children as well as balancing work became challenging if their position was not flexible to handle the condition. To accommodate the situation, women who had to work outside the home left older children in charge as they went to work.

Aspan & Hinchliffe (2021) expands on one alternative Verizon, a technology organization, helped women with flexible work hours, working from home when possible, and increasing childcare options. They explored alternatives for employees, including training them for other positions when their current position was not working due to the pandemic. According to the chief HR officer of Verizon, it was more cost-effective to go this route than to handle a high turnover rate by training new employees on the technology they use. Many of the changes have stayed in effect to help reduce employee turnover. The changes help keep women in technology employees at Verizon during the pandemic.

Laraja et al. (2022), in “Disproportionate Negative Career Impact of the COVID-19 Pandemic on Female Pediatric Cardiologists in the Northeast United States,” identifies another aspect that women in STEM during the pandemic are burned out. A reported 72% of cardiologists feel the impacts of burnout just in the Northeast United States. With decreased satisfaction with work, many women are trying to understand the point of working and taking care of a family. They are exploring whether it is logical to change, reduce stress, and focus on one task instead of multiple tasks. The most significant impact that caused the burnout was taking on more household responsibilities due to childcare being close and children not being in school buildings. The additional responsibility fueled the burnout of the cardiologist that took part in the study. To reduce burnout, the cardiologist that took part in the study reduced work hours to accommodate the additional responsibilities of their families.

According to Folbre et al. (2021) in “Essential Workers and Care Penalties in the United States,” when the pandemic started, essential became a powerful word. The Department of Homeland Security mandated that essential workers “protect their communities while ensuring continuity of functions.” Moreover, more than half of essential workers are women during the

pandemic. The COVID-19 pandemic affected women with high turnover and burnout in essential STEM roles. Women learned that they were essential and should be paid as such. The pay for women in STEM compared to men increase turnover and burnout along with balancing family roles.

Collins et al. (2021), in the “COVID-19 and the Gender Gap in Work Hours,” study the work hours of heterosexual couples with children during the COVID-19 pandemic. The gap also increases with work hours during the COVID-19 pandemic. Depending on the child’s age, women worked 1.5 to 2 fewer hours a week from February to April 2020. If a child was 1-5 years old, that number increased compared to parents with a teenager. In the research, men usually worked more than 40 hours a week while their wives worked fewer hours. For Example, in April 2020, women in the study with children 1 to 5 years old worked 6 hours less a week than their husbands in the study. The research indicates that homeschooling had a strong effect, especially in this age group that is just learning and need more attention from adults.

Tüzemen (2021) argues in “Women without a College Degree, Especially Minority Mothers, face a Steeper Road to Recovery” further investigates the COVID-19 pandemic effects on women and evaluates how it affects women without a college degree as well as minority mothers. The research shows that women with college degrees’ employment change were reduced by 1.5% while non-college women diminished by 5.6%. The research demonstrates that women non-college dropped in the labor workforce by 3.3% while women with a college degree decreased in the workforce by one percent. The difference with research is that women with degrees could telework due to the position they held at that time. Women working in the STEM field with a college degree may not have lost positions during the pandemic due to telecommuting. Other women not having a college degree had a different outcome. Women with

a STEM degree may not have been affected by the loss of work during the pandemic; it affected them in other ways with balancing work and family to the point of burnout for many in the fields.

Krukowski et al. (2021) examined in “Academic Productivity Differences by Gender and Child Age in Science, Technology, Engineering, Mathematics, and Medicine Faculty During the COVID-19 Pandemic” the differences by gender and working in the STEM field in academics with work-life balance during the pandemic. The research concluded that, on average, they worked 15 hours less per week than their counterparts without children. Even though that is a considerable quantity of hours not being worked, it does not consider that they worked 54 hours a week before the pandemic. What the STEM academic faculty decreased in was optional work they did previously, including grant writing and peer reviews, to name a few things. STEM faculty focus on core work and family and remove optional work to succeed in their life. The faculty evaluated what was essential to them to reduce burnout and turnout. Reducing or eliminating the non-essential work made them successful in family and work-life balance. Women faculty did take most of the childcare engaged time at 77% compared to male faculty at 61%. The majority of the faculty in the study was 79% White, 9% Asian, 2% African American, and 9% Hispanic.

Pierre-Bravo, D. (2023), in “The recent tech layoffs have disproportionately affected women,” about how the recent layoffs in late 2022 and early 2023 affected women in the STEM field. Due to the pandemic, many women made a difficult choice to stop working to take care of the family due to children’s education and taking care of the household. The difficulty of working and caring for the family became overwhelming, and a tense choice had to be made. Women were making this decision, and returning to work after the pandemic has made them

vulnerable to the recent increase in layoffs. Layoffs at many organizations are based on seniority, meaning women have a sixty-five percent increase in being laid off due to organizational status. The value of diverse knowledge that is being affected due to the recent layoffs is a concern for the future leadership of many organizations with the lack of diversity that is no longer within the organization.

Women's leadership improvements

Sey, A., & Hafkin, N. (2019) explores in "Taking Stock: Data and Evidence on Gender Equality in Digital Access, Skills, and Leadership" women participating in the STEM firm's ownership at 47% in Oceania. Currently, 9.5% of women in telecom hold CEO positions in the field. Botella et al. (2019), in "Gender Diversity in Stem Disciplines: A Multiple Factor Problem," brings in the factors and the different impacts on the gender diversity gap. 36.4% with no actual support, even though they say they support women in leadership. Three items brought to light as to why women are leaving the STEM field are lack of access to key creative roles and feeling stalled in their field of work. Organizations create company awareness about diversity and help foster company-wide diversity. It brings in evidence that employers should consider work flexibility which would benefit the employer with increased productivity. It has been evident that many employees during the pandemic did not travel to the office; they had more time with family and work.

Gorbacheva et al. (2019) research in "Directions for Research on Gender Imbalance in the IT Profession" explores the rationale and methods of gaps in the IT profession in Europe. The research on how future research should be considered to see if the gender imbalance in the IT field is reduced. With the lack of access to technology, the gap for women in the field will grow. Karen (2020) interviews women in "The Adventures of Women in Tech: How We Got

Here and Why We Stay,” along with research data on women in the field of STEM. It discusses where they started in their journey of being in the STEM field and the pros and cons of being in the STEM field. Kemp (2020), in “Having Women in Leadership Roles is more important than Ever; Here’s Why,” takes a different direction by looking at how organizations have women on the board of directors by country. It also shows how different areas have increased women on the board of directors. It does not break it down from technical organizations to non-technical, but it shows how small the percentage is overall.

Mendoza (2019) has a background in technology from working at IBM. The book “How to be an Intelligent Woman in STEM: #Science #Technology #Engineering #Math” brings in women leaders in technology. What women have been doing to make it to a leadership role will not work in the future. The core skills to be successful in STEM leadership have changed from 2015 to 2020. In 2015, creativity skill was number 10 on the list and moved to number 3 in 2020. One skill that will help women grow is emotional intelligence. A skill not listed in 2015 but moved to sixth place in 2020. Wagner (2020), in “Journeys, Women in Tech: 20 Trailblazers Share Their Journeys,” steps into the journey of 20 women that have made it into STEM leadership. UberMedia CEO Gladys Kong to software engineer Ishita Mandhan. There is no straight path for women; each is a different path in a challenging field with no direction in any STEM area. Each one went into a different part of STEM and found their way to leadership. According to Gladys Kong, CEO of UberMedia, “Diversity eliminates blind spots,” with having women leaders bring a different viewpoint to the boardroom. Women see the world differently, from cup holders in cars to analyzing data for new software.

Farkas et al. (2019), in “Mentorship of Women in Academic Medicine: A Systematic Review, explores one change that has been happening in mentoring programs that have been

successful for women in STEM, specifically in the medical field. The programs have shown an increase in promotions by women as well as high satisfaction rates, with women helping other women to be successful in their fields. The mentorship has helped women learn from others how other colleges have worked in the field to be successful in the field. Mentorship programs can work in various fields, and peer mentorships can have a lasting effect on those participating in the program. Mentor programs should have common goals for everyone involved, as well as an understanding of what all parties wish to take from the mentorship.

Hill (2018) discovers in "Entrepreneurial Women in S.T.E.M" how women in STEM leadership may be small percentages in many areas. One place where women excel in STEM leadership is entrepreneurship. Starting their STEM business has helped women grow in the field. Women also have a 12% higher revenue than men in STEM entrepreneurship. Women can have a flexible schedule and an excellent work-life balance in their profession. Women are stepping out and changing STEM with innovations and a different way of imagining their new designs in STEM.

Perez (2019), in "Invisible Women: Data Bias in a world designed for Men," how a study from the BI Norwegian Business School successful women leaders identifies five traits in their study. The five traits are emotional stability, extraversion, openness to new experiences, agreeableness, and conscientiousness. Women are naturally outgoing and open to learning which benefits them in a leadership role. In STEM, being open to new technology is vital to growing as a leader. Women leaders commonly prioritize others first, including family, friends, and colleagues. Women are naturally well organized when handling multiple situations simultaneously with family, personal, and professional life. Being naturally well organized is beneficial for understanding an issue or concern as a leader. Lastly, emotional stability when

working in a STEM field, not everything runs smoothly, and having an even-tempered in, particularly in the face of challenges, is beneficial for a female leader.

Chapter 3: Research Question & Methodology

Research

Women moving into technology has always concerned me when working in telecommunications. The research questions I am considering are why women are not moving into leadership in technological areas. Women have gone to college and into the workforce since the 1970s. Is it because women are not able to work in technology due to education? Are women not pursuing technology due to needing mentors to see their leadership success? What is holding women back from becoming technology leaders? Are women finding technology challenging to learn? How are women in other countries progressing in leadership in the technical field?

Methodology

Research of women's historical data in technology and growing into leadership and evaluating women's leadership growth in other countries. The methodology of women in a leadership role in technology is challenging, with the area new and evolving. With the field evolving interviews, it will be ideal to see how women in the field of STEM have found their path. Working in the telecommunications field, I will focus on interviewing several women in this area and teachers who teach STEM to future students in the field of STEM. The strategy is to interview women in the STEM field about why they chose the field. Another view is to look at STEM education and has women pursuing this field have increased over the last forty years.

The first step is to correlate the interview questions and then lay the questions to flow for the interviewee. The next step was to evaluate how to gather the interview information using

SurveyMonkey, Google Forms, Microsoft Word, or face-to-face interviews. SurveyMonkey was considered due to having to work with firewalls; information would be secure on the servers, and easy access for everyone to utilize and organize data after the interview. Google Forms is easy to use and has a great layout. The concern is that many people would have difficulty accessing the form due to firewalls and may not complete the form due to the lack of frustration of having to work with firewall issues. Microsoft Word did not secure the data compared to other programs and would not have been easy to manage during the interview process. Face-to-face interviews would be challenging with everyone's schedules as well as giving them time to answer the questions thoughtfully in their own words. The decision was to utilize SurveyMonkey to process interview information due to data security and accessibility to interviewees.

To process an interview by asking women that I knew in telecommunications and STEM teachers. Then set up a process flow to gather interview information, starting with the questions to ask the interviewees. The information gathered was utilized in a structured interview of women that work primarily in telecommunications. Then evaluate the format of questions with what to ask and when to ask the question in the process. Having each person be asked the same structured questions in the same format. The next step was to process the interview information. With the gathered information, process the interview information in SurveyMonkey into Excel to analyze. Before starting the interview process, a small sample size of two responses was to see how the data flowed correctly in the process or if there was an issue with processing the data. Each person being interviewed was explained about the interview and what the information would be used for. The interview had a set completion date to give time to analyze the data. The information was gathered from December 10, 2022, to January 10, 2023. During the process,

fifty women received the interview questions, and thirty-two women completed the interview questions.

Post-interview, the information gathered and evaluated. The questions in the interview are open-ended to receive and understand and express themselves within their answers. Each question's response was evaluated individually. The data was organized and compiled with each question response to find similar responses. The responses to the questions were assessed for similarities of each question. Finally, compile the data to finalize each question in the research.

The final data was looked at for usable data in the research. Then evaluated information that did not connect to the interview topic was removed. Next, any data that could be linked to a particular person was removed from the response, including location, position title, or previous employment information. STEM teachers were asked to be interviewed during the process, but none responded to the requested interview.

Interview Questions

Is your degree considered a STEM degree?

Are you happy working in STEM?

Would you step into leadership in STEM?

Why did you choose to work in the field of STEM?

What challenges do you see in women going into the field of STEM?

What would you like to change to increase women in the field of STEM?

If you worked in another field, what would it be?

What is holding you from stepping into leadership in STEM?

Limitations

The limitations of the study's research include that having a larger sample size would have been beneficial. Expand to other avenues of gathering additional people to interview in the research from organizations, STEM societies, or social media. To open up the study to men to see their viewpoint of women leaders in STEM. If I could have done anything, I would have done it differently, which would be to code the data to analyze additional data from age, gender, race, and location. The benefit of gathering additional information for age is to analyze generational differences in the data.

Assessment

One evaluation of women's leadership in STEM is the need for more data in the field. In an evolving field, historical data is challenging to find. An assessment is that STEM is a broad field, including engineering, computer science, and data analysis, to name a few fields. As a broad field, pulling data on women in leadership is challenging. There is a low percentage of women in technology, which makes women in leadership even smaller. Also, women are entrepreneurs starting small technology businesses, and it is challenging to account for all women in leadership roles in the STEM field.

Also, due to the recent COVID-19 pandemic, women were affected by no longer working to help with the family home during the pandemic. Women that have recently come back to the workforce have a challenge due to recent layoffs at many technology organizations, including but not limited to Google and Microsoft. Since many organizations lay off due to seniority and women returning to work after the pandemic, the layoffs are affecting women, which in turn affects women having a challenge in moving into a leadership role within an organization. With the recent dismissals of Google and Microsoft, forty-five percent of the people being laid off

were women, which could affect the future of technology by not having diverse employees working in STEM. Evaluation of women having to reduce hours to have a family and handle family due to the COVID-19 pandemic and other family matters affect women in moving into a leadership role. Women are sixty-five percent more likely to be laid off than men due to being recently hired from taking time off (Pierre-Bravo, 2023).

The assessment of women in STEM leadership has multiple layers and setbacks. Women are challenged by themselves, holding themselves back from lack of confidence, starting a family, and the financial market. Limitations of women in STEM leadership are more substantial for women from other nationalities, races, and disabilities. Women in this group must handle multiple constraints of moving into a leadership role within an organization.

Chapter 4: Results

The focus is on interviews in the telecommunications field, primarily in the United States. With the research, the results of nineteen female employees were interviewed in the field of STEM. Of the females interviewed, 58% had a degree in the STEM field, while the others did not or did not have a degree. The majority have a degree in a STEM field. After interviewing the women, they said they were happy and enjoyed working in STEM. If the women wanted to move into leadership in the field of STEM, 95% said they would love to move or are currently in a STEM leadership role.

Why STEM?

Each participant responded differently to why they chose to work in STEM. The majority, at thirty-four percent, were due to falling into a STEM field different from their original field of work. They wanted to pursue it, but they fell in love with the work once there.

They considered it was the right opportunity at the right time and place. One interviewee moved into STEM due to a field attempt to teach and decided to change. Others were in a field that worked with people in a STEM role and wanted to step into that role and was glad that they did because they never looked back.

The second highest group at twenty-eight percent was the women who loved problem-solving and the challenges of working in STEM. For many, it is exciting to learn how to build and be challenged with breaking things to resolve an issue for someone with technology. Being able to learn something new every day is a reward. The last two groups tied at nineteen percent with exciting and face pace as well as loving education. Women interviewed preferred the fast pace and the energy of the evolving technology. The area of STEM is a constantly changing field and has yet to slow down with the new ideas that come out every year. The last group fell in love with STEM education in math and science primarily. Usually, falling in love is the first step into STEM with seeing what you can do and understanding the research being completed in the field of STEM. Table 1 below shows “Research Results of Path to Stem.”

Fell Into STEM	Problem Solving	Exciting and Fast Pace	Love STEM Education
11	9	6	6
34%	28%	19%	19%

Table 1 Research Results of Path to STEM

Challenges facing women in STEM

Challenges are everywhere, and women in the field of STEM see the challenges as awareness and encouragement. Several women in the STEM field being interviewed highlighted that many women need a support circle with representation and understanding of what they are

going through in a dominantly male field. Building confidence in your abilities can be daunting with the challenges of being the only woman in the room. A challenge in many STEM fields is the need for more mentorship to help with the path to leadership. Along with mentorship to build a network and meaningful connections in your field of work. Starting early with young women in STEM is a challenge, with the need for more support from home at a young age than male siblings or being serious about considering college. A change could lead potential bright minds will pick another career field with more acceptance.

Women represent only about a quarter of the workforce. The favoritism still exists as men vastly outnumber women in the STEM field. In some areas of STEM, the impression is that women should not be working in technology and instead should be at home taking care of their families. However, more schools are adopting the STEM focus, and organizations such as Girls to Coding provide early exposure to young girls. The programs have exposed young women to STEM and the field they could nurture and enjoy. The growth has opened doors that previously would have yet to open or be considered in the past for women.

Women are occasionally considered inactive with being promoted into leadership roles due to not being told they need to be more technical and defensive compared to men in the same position. Through acceptance and cultural changes, women still have to work harder to be noticed and advanced in the field of STEM. On the other hand, women illustrate curiosity differently from men, which is also noticeable when moving into a leadership role. Looking ahead into the future, one brought up the increase in automation, and due to automation, there will be fewer roles in STEM, which will also affect women in the industry. The future change would also affect women applying for STEM degrees and going into leadership roles.

On a positive note, more than one person being interviewed has only seen benefits as more women have moved into STEM. The change is that women in STEM have found support from colleagues and personal education to help them excel in the field. As more and more women engage in STEM, the modification will become a norm of acceptance and not a challenging encounter for women in the field of STEM. With the help of being positive, letting them know they are doing great work, and encouraging them to move into a leadership role in STEM. Lastly, in one interview, it was brought up that not focusing on the woman angle and instead being part of a team stand up as a team member. The world has changed from years ago, and we as a society should move forward.

Lift women in STEM

Support and access are viable to increase women in the STEM field. To begin with, early recurring and support while in middle and high school with mentorship programs, internships, and networking events that focus on female talent at a broader scale than it is currently. For women currently working in leadership roles to pay it forward to future women with exposure to science. Hearing the stories of how women in STEM leadership developed into their position. Including bringing awareness of high-powered women in the STEM examples of Katherine Johnson from NASA and Radia Perlman, to name a few. Giving young women confidence and increase of opportunities by letting them know they are good enough. They can demonstrate the leverage women bring to STEM fields. Helping other women in their careers to the next level is essential for future growth. Changing STEM education from being abstract to STEM with a purpose or mission will attract and retain more women in STEM.

Events that help open doors will be beneficial to show women what is available to them in STEM-related fields. It is about educating younger girls and getting them excited about STEM

fields so they select the proper role for them in a college major. Events could be learning about coding, space, or other STEM fields. One way to open the door is by focusing more on STEM education in the home and schools for females that wish to pursue STEM. It would be beneficial to see representation at the leadership level for future women in the STEM field. To have access to career days or job shadowing of women currently working in STEM leadership. That would help level the playing field in STEM.

In the interview, it was brought to light that women work differently, which should be embraced with flexible work hours, onsite child care, or working from home to increase women's growth and progress into leadership. A view brought up is that women can do better employment since they are natural-born organizers, which is beneficial in the STEM field, primarily in nursing and engineering. Lastly, it was brought up that focusing should be more on expertise and experience for the position than the sex of the person. A person's knowledge and attitude should be looked at more than which bathroom they use.

Other fields of interest

When interviewing, another viewpoint was to evaluate what other fields of study interest them if they did not work in their current field. Learning what other fields the women interviewed would be in was broken down into five categories. At thirty-one percent, the majority was a group of other unique fields of the profession, wedding planning, finance, or journalism. After that, others interviewed considered other STEM fields in the medical field or nursing at twenty-two percent. A higher percentage of the women interviewed would step into teaching over the medical field at twenty-five percent. Lastly, nine percent said they would consider law enforcement. Learning what various fields they would step into other than their

current STEM position brought up individual responses. The data is also shown in Table 2 below, called “Research if Moved to Another Field.”

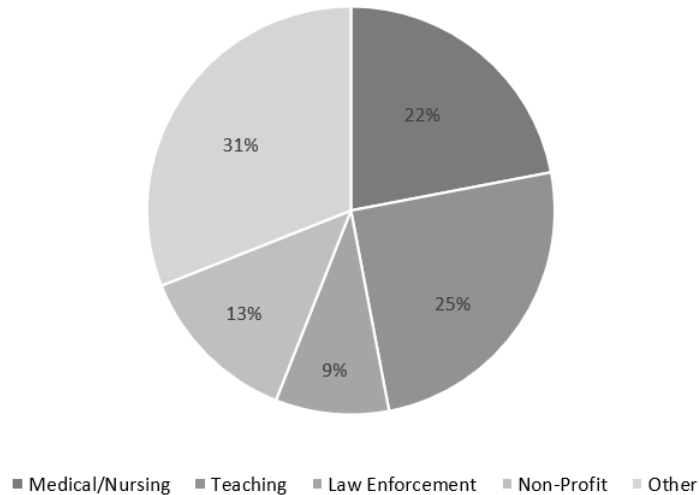


Table 2 - Research if Moved to Another Field

Holding back

The challenges of stepping into leadership, especially for women in the STEM field, maybe the same for other women in other fields. Twelve of the respondents are currently or previously in a STEM leadership role. The rest had a different perspective on moving into STEM leadership. STEM leadership has improved over the years, but it is still there and one of the challenges. As a female in the STEM field for only a few years see the challenges that are primarily male and older. It is not easy to be seen as an expert or a capable leader compared to daughters or granddaughters in different fields. Male STEM leaders still have a different viewpoint on who should take over when they retire or what women are capable of. The struggle to prove as a female leader and the need for quality education. The other challenge is seeking opportunities to learn from current leaders. Women are only sometimes pushed into these

opportunities and or will have to add them to their current workload without help. They are gaining the trust and buy-in of others in the field to move into STEM leadership successfully.

Fear of failure, time, and family commitment is a massive concern for several women interviewed about moving into leadership roles. Other concerns that came up in interviews were women being their own roadblocks, considering they are not qualified. Women also need to make sure women refrain from talking themselves out of pursuing a career in STEM leadership. Also, the lack of interest in females moving into leadership is due to the other commitments they may have outside of work. The pandemic did help many women working remotely to have a more flexible work schedule to balance life and work. Another concern is learning the current position before moving into a leadership role. The balance of stepping into leadership and understanding as you move up into the leadership role. They are moving one step at a time and slowly running to the finish line.

Three people interviewed are close to retirement and prefer to stay in their current position and retire in the next few years. They saw no reason to change positions so late in their career. Others prefer the hands-on work where a leadership role would be stepping back from what they love and into something they choose not to do, which is being in meeting after meeting. Another concern is hiring women into leadership role that is not ready, or the organization needs to meet a goal of having women in leadership roles. During one interview, it was brought up that the right person for the proper position should be considered when considering a leader. Lastly, nothing holds three people interviewed; they are currently in a leadership role in STEM. The three currently in leadership roles express how they enjoy working in STEM leadership.

Chapter 5: Discussion and Conclusion

Discussion of Results

The various interviews performed for this study show that change has positively happened for women in STEM. That growth is happening for women in the field. Women want additional changes in the field with more vital mentors or support from others in STEM. With the strength of support, it would progress women staying in the field longer and increase women into leadership. Women have a natural sense of value; without that, they are more likely to move into another field that allows that natural feel.

The results show that a STEM degree was almost split down the middle among the women interviewed for the results. Depending on the field of STEM, a degree is needed. An example is nursing or a doctor. They enjoyed being a part of working in STEM and contributing to the field with the fast pace and changing technology. The exciting result was that 95% would move into leadership, and the 5% would not due to retiring in the next few years. Falling into the STEM field is common, being new or not having family members in the field. Generally, due to work in the military or something that happened in their lives, they changed direction and moved into the field. The results bring in the liveliness of problem-solving and being challenged, which is energizing to see in young students.

The results of challenges that women in the STEM field face in many cases are the same challenges felt in other male-dominated fields of work. The simple step of being aware of them and encouraging women to grow in STEM and take the next step into leadership. Encouragement and positive reinforcement from network connections will help build women into future leaders. One concern is favoritism and not looking at someone's work results when deciding on leadership roles. Leadership is about the role of someone that can lead the team to be successful.

A person may be successful in their current position and have difficulties leading as a leader. Leadership comes naturally for many people, while others struggle to motivate followers to succeed. At one point, the most substantial challenge for any female in STEM is feeling or being told they are not technical enough or considered defensive. Being a fine line to finding out how to present yourself with the technical background while not being defensive with the knowledge that a female has in a position becomes even more noticeable in a leadership role. When to speak up and when not to is a challenge for any leader, especially for women in that role. One piece women bring to the table is a different leadership style to the position, looking at and thinking differently compared to their male counterparts. Leaders who lead with compassion and find a unique team style can be successful.

Women in leadership will become a norm over time and will ultimately be a global norm due to the diverse leadership style that they naturally have. Interesting how automation was brought up and has been an issue for years in the STEM field, starting with automotive manufacturing using robotics to build more cars. Women, on the other, have learned to adapt and change more accessible than their male counterparts and will find a different path in STEM to be successful, including entrepreneurship in building new technologies.

Women have grown in success since the 1970s and to still rise to all be equal, including gender and race. The one concerning viewpoint is not focusing on women but instead wanting to join the team. Reduce the realistic view of what a woman can bring to STEM by blending in and not standing out as a leader. Leaders have an individual style, and being part of the team as a member reduces the natural unique leadership style.

The way to grow women into the success of leadership is to lift women into leadership roles with support and mentorship programs. Mentorship programs open the eyes of middle and

high school students to what they could do in STEM. Many times they have yet to learn or have never been exposed to the new fields that are evolving. By taking the next step in helping the next generation or motivating women currently in STEM, women in leadership will grow within all organizations.

Learning about what other women would pursue other than STEM meant that women would still flow into STEM in another field or one that connects an example as teaching. Holding back from leadership is a difficult step for many people, from they will be victorious to it is the right decision for their career. For the women interviewed, it was solid that it is the self-confidence to make that next step. Concern how a leadership role will affect their plans for a family or my current life balance. Along with gaining the trust and buy-in of others in the field to successfully move into STEM leadership.

Conclusions

Research has illuminated that women have grown in the field and have moved into leadership roles. The research also shows that women still want to become leaders in their careers. Their own personal hurdles, as well as others seeing them grow into a leadership role, is a challenge for many women in the workforce. The change in the flexible work schedule may help women reconsider women's leadership. Technology has changed over the last ten years with new technology, which could help increase women moving into leadership roles. The field is evolving into new avenues for women, and no set path to leadership has been developed instead of naturally working toward the goal of becoming the leader.

With the concern of equality of leaders being hired for skill, the New York Philharmonic example decided to change auditions to blind auditions. From the early 1970s to the early 1980s,

it changed from zero to fifty percent women musicians in the Orchestra. With a screen, the orchestra changed to skilled players (Perez, 2019). Why can't leadership be considered what a leader brings to an organization's success and not based on gender? With this change, the only skill was looked at as women excelled. Women bring to the table a different leadership skill; once that is noticed, women in leadership in the field of STEM will also excel.

The process data from the interviews and research brings to light the issue of why there is a low number of women leaders in STEM. They have challenges balancing work with growing their career into a leadership role within an organization or making it as an entrepreneur. Having children and starting a family is also a struggle for women to balance and grow into leadership roles. Personal struggles of balancing family and a career with what they want to do outside of work with volunteering, family, and friends. Moving into a leadership role is a process balancing act for anyone to transfer into and be successful. Suppose planning on being a leader in STEM as a woman has yet to be a clear path due to the percentage of women currently in the role and considering starting a family, layoffs that may happen along the way, and the constant changing of technology. Planning to work or step into the role of leadership in STEM for women is a path full of detours and changing courses, then a laid-out process to move into a leadership role. Many women have to produce their way into a STEM leadership position. Many women make their leadership path with entrepreneurship to create a role for themselves.

Women leaders in STEM reach a different style and content of people to be successful. They have to work thru challenges that others do not with learning how to balance work, life, and family. They understand how to balance multiple fires around them and make informed and executive decisions in a blink of an eye. The challenge is often being the only female at the table

while helping other women find a seat at the leadership table. Being able to help other women grow and be successful once moving into a leadership role is also a test of success.

Implications of Research

This research is significant for Women's Leadership in a small area of the STEM field since it has multiple layers and is constantly changing due to new technology. The research was also focused on women in the United States and not globally. Other options besides mentorship and support of other women could be evaluated in the future that may benefit women's leadership.

Recommendations for Further Research

To better understand how women leaders have a positive impact on the organization as well as followers. By looking at current organizations that have women in leadership roles and see how employees work for them, see if there is a difference in leadership compared to a male in the same position. Also, using additional data from past women in the leadership role of what they would do differently and the challenges they saw while in the leadership role.

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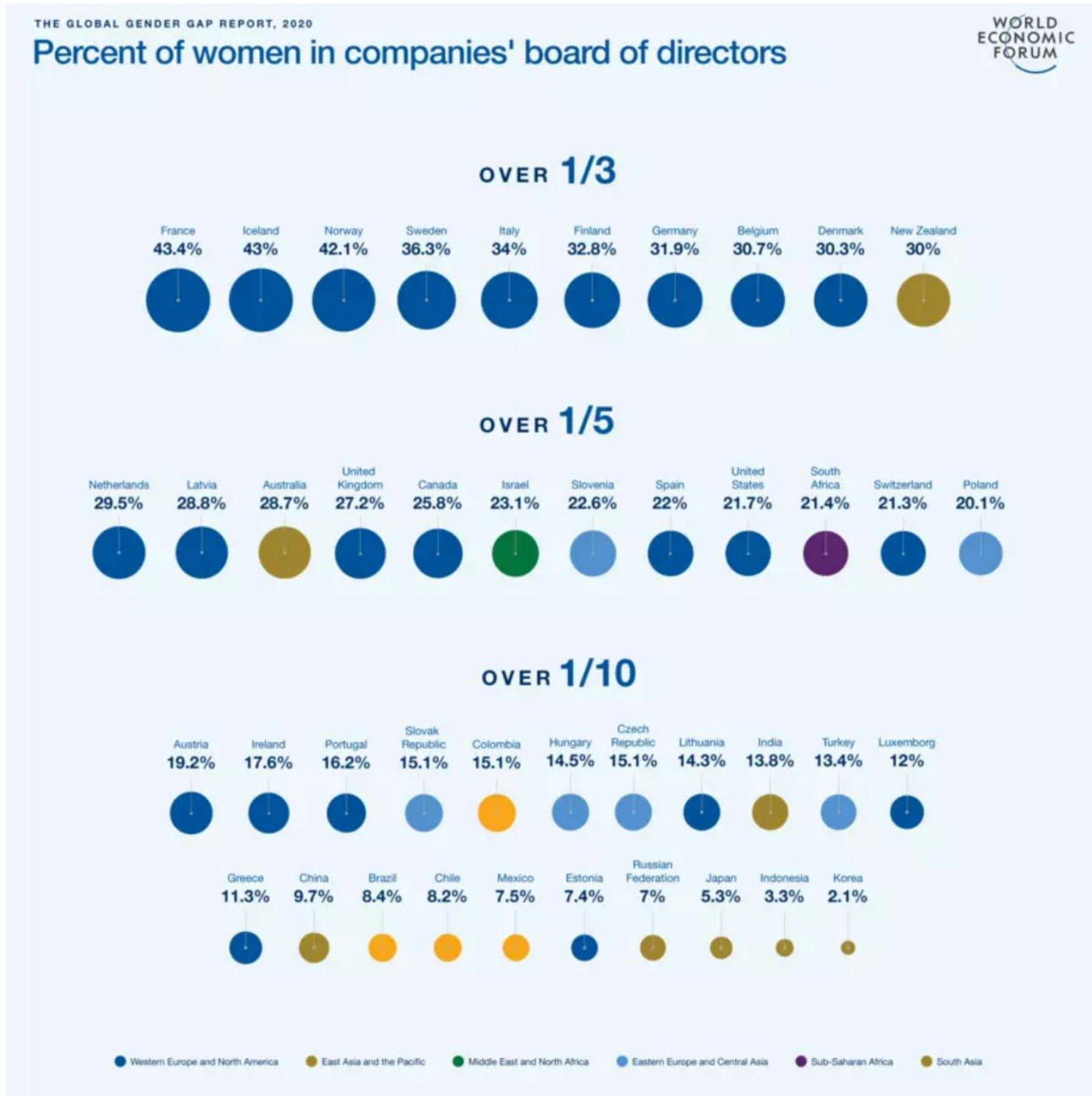
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Appendix A

Percent of Women on Companies' Board of Directors (2020)



Appendix B

Steps of Interview

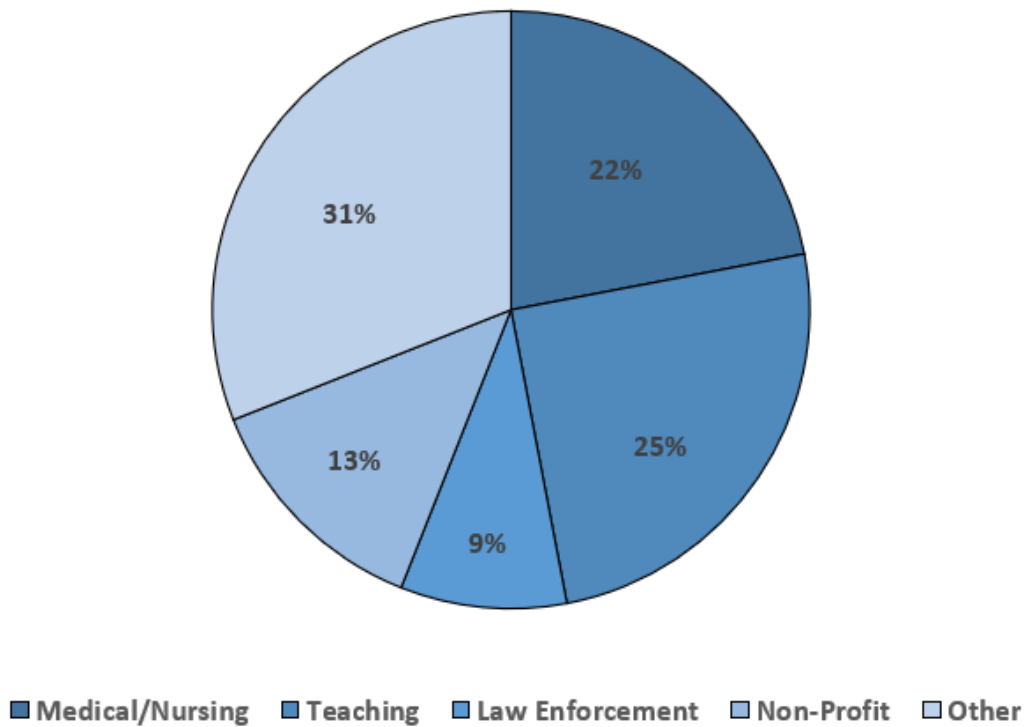
- Correlate interview questions
- Evaluated how to gather interview information
 - SurveyMonkey
 - Google Forms
 - Microsoft Word
- Decided on how to gather interview information
 - Considering privacy
 - Access to the interview to work on possible firewall concerns
- Set up a process to gather interview information
 - Questions to ask
 - Format of questions
 - Process interview information
 - Tested interview process with a sample size of two response
- Interview
 - Explain what the interview is about
 - What the interview information will be used for
 - Ask for interviews to respond
 - Set a time to respond by
- Post Interview
 - Evaluated each question's response individually
 - With each question organized similar responses together to compile data
 - Assess the similarities of each question
 - Compile data to finalize data of each question
 - Evaluate final data
 - Usable data for the research
 - Information that does not connect to the topic be removed
 - Information that could link to a particular person removed from the response included
 - Location
 - Position Title
 - Previous employment information

Appendix C

Research Results of Interviewer’s Path into STEM

Fell Into STEM	Problem Solving	Exciting and Fast Pace	Love STEM Education
11	9	6	6
34%	28%	19%	19%

Research results of interviewers decided to move to another field



Appendix D

Interview Detail Results

Do you consider yourself?	Is your degree considered a STEM degree?	Are you happy working in STEM?	Would you step into leadership in STEM?
Female	Yes	Yes	Yes
Female	No	Yes	No
Female	No	Yes	Yes
Female	No	Yes	Yes
Female	No	Yes	Yes
Female	No	Yes	Yes
Female	Yes	Yes	Yes
Female	Yes	Yes	Yes
Female	Yes	Yes	Yes
Female	Yes	Yes	Yes
Female	No	Yes	Yes
Female	Yes	Yes	Yes
Female	No	Yes	Yes
Female	Yes	Yes	Yes
Female	Yes	Yes	Yes
Female	Yes	Yes	Yes
Female	Yes	Yes	Yes
Female	Yes	Yes	Yes
Female	Yes	Yes	Yes
Female	Yes	Yes	Yes
Female	Yes	Yes	Yes
Female	No	Yes	Yes
Female	No	Yes	No
Female	Yes	Yes	Yes
Female	Yes	Yes	Yes
Female	Yes	Yes	Yes
Female	No	Yes	Yes
Female	Yes	Yes	Yes
Female	No	Yes	Yes
Female	No	Yes	Yes
Female	No	Yes	Yes
Female	No	Yes	No
Female	Yes	Yes	No

If you worked in another field, what would it be?
Animal rescue
Nursing
Law enforcement
Non-profit helping veterans and their spouses to help them find gainful employment.
Nursing
Journalism
Teaching
Medical
Teaching
Wedding planner
Law enforcement b
Science field
Teaching
Finance
Teaching
The medical field.
Nonprofit, humanitarian
Tourism
Teaching
Ice hockey coaching/management.
Working with animals
Education
Education
Legal
Construction
Medical
Education
Medical
Strategist, Economics
Nursing
Construction

Why did they choose to work in the field of STEM?
It excited me, the constant change and upgrades, always leading-edge technology.
I have worked in the telecommunication industry since the late 1980s and have just advanced with technology. From Wireline Inventory and Budgets to Construction Engineer new build towers.
It is a fast-growing, rapidly changing field. I find it energizing and exciting.
It is an industry that is evolving and growing. It also needs more female leaders. With it growing the opportunities to be one of those leaders are greater than in other fields. Technology can help all other industries and improve quality of life. It also is potentially the most helpful of the career fields.
right opportunity at the right place and right time.
For career and financial growth
I have always been curious about how and why things work the way they do
I like solving problems
My dad inspired me to be an engineer. We both like to solve problems.
I find my field both challenging and rewarding. I also learn something new daily as the industry continues to expand.
I love the challenge and learning new technology others do not have yet
Fast paced. Great pay
I fell into the field of STEM by accident, and I fell in love with the possibilities in the communication field.
I enjoyed math and science.
My co-op was in a mobile device company and so I wanted to see the network side of the mobile.
After a failed attempt at teaching, I joined Bell Atlantic, not knowing about technology. I loved learning about technology and enjoyed my job. So, I did not choose to work in the field of STEM, and it chose me.
It was not a conscious choice initially; it fell into place. I was in a product marketing role with a technical element and did well and liked it.
Math and science were my strongest subjects in high school, so it made sense to study engineering, which led to a career in technology
I love solving problems and always have been fascinated by technology and what it can do to improve lives.
From a very early age, I was intrigued by how machines and things like light switches worked. My Dad was an engineer, and I was sandwiched between brothers and was comfortable in the traditional male settings.
I have always been a nerd, and combining tech with my operations background was a fun opportunity.
I did not choose this line of work, life just worked out this way.
It is always something that interested me, even as a kid.
Potential for travel better, better pay, and more interesting work.

I am interested in technology, specifically cybersecurity, and computer science.

IT and Networks are the lion's share of my career. It is where I feel most fulfilled and happy. Feeling passionate and energized about what you do daily always translates into your best contribution. My experiences in the business units where I gained business acumen were extremely important to understanding how STEM runs the company's success. .. dear, I say the universe.

It is a fast pace, changing industry with a lot to learn.

I was extremely interested to understand why and how things worked.

It was a happy accident. I initially did not plan to work in technology when I started contracting within the industry over 20 years ago, and I have been in love with my work ever since. I enjoy solving problems, and technology allows me to do that alongside some of the most intelligent people I have ever met.

I love innovation, creativity, exploration, and constant learning. The evolution of technology is constant, and I enjoy being able to ideate around what could be and then actually put it into action, making those things happen.

I always knew I wanted to work in the business world, but it divinely led into the wireless/telephone industry.

I like computers and working with code.

What would they like to change to increase women in the field of STEM?
Stop focusing on the woman aspect, it is a job. Can you do the job? Do you have experience with the job? Your experience should speak for itself as well as your attitude.
Science has always been a dominant male career, along with Engineering was always a good old boy network, it's coming around; women are choosing to become more than teachers and nurses and showing they can do an even better job because women are natural-born organizers.
More education and focus in the home and our schools for females.
I would change from the young to the current. Encourage girls at a young age and more opportunities for women. I would also like to see more of the current women in STEM bringing more women with them, it has gotten better, but we can still do better. Helping others get to a new level in their career is important. Often women forget to help other women when it is very difficult to get into a male-dominated career.
It needs to start in middle school - high school. Investing in kids financially and with time. Adopt a school or a grade, and stay with those same kids until they are ready for their first job.
Level the playing field.
Many girls and women want to be part of something purposeful and meaningful. Changing STEM education from being abstract to STEM with a purpose or mission (to help society, environment, etc.) will attract and retain more girls and women in STEM.
Support and access
Start early and give exposure to young girls in STEM in high school.
I think it is important for women to know what is available to them in STEM-related fields. It is about educating younger girls and getting them excited about STEM fields so they select those roles as college majors.
Confidence and better opportunities. Letting them know they are good enough
Longer internship opportunities that start earlier
More roles for women in a Sr. Leadership role.
1. More mentorship and sponsorship. 2) More representation at leadership levels
Better recruiting and early encouragement of stem fields
I would like to see more women leaders in STEM being highlighted in a larger fashion. Young girls are impressionable and see women in magazines, on tv, etc. However, we must bring awareness of high-powered women in the STEM field. People like Katherine Johnson from NASA and Radia Perlman.
Mentor programs, active recruiting, early education programs, corporate focus, etc. Much of this is being done, it needs to continue and be on a wider scale.

<p>Early recruiting and support during the critical middle/high school years, deliberate female mentorship programs, and networking events for early career women focus on female talent development.</p>
<p>More women in STEM fields help bring awareness of the opportunities and what strength we can leverage to be successful in the field. More mentorship and access to learn the story of women who have been successful in the field.</p>
<p>Pay it forward. Go out of your way to bring other women along on the journey. Provide the support that creates the medium for women to nurture their confidence.</p>
<p>More early exposure, my parents took us to the science museum and bought us chemistry kits/microscopes/telescopes for presents as kids, a large part of my childhood centered around using our free time to learn new things.</p>
<p>More leadership programs after WOW, better support for female engineers.</p>
<p>More training geared towards females in STEM and a better education for everyone when it comes to STEM.</p>
<p>We need to reach females at a very young age before high school to recruit them and get them interested in STEM.</p>
<p>Open up the universe of STEM to young girls/women early on. It is hard to dream about stuff if you do not know about it.</p>
<p>inclusiveness</p>
<p>Opportunities for shadowing which would open the door to entry-level knowledge</p>
<p>More career days and knowledge sharing on what my journey has looked like in technology.</p>
<p>Onsite child care, flexible work hours, and continued work from home/remote would assist a woman in being able to work in STEM.</p>

What is holding you from stepping into leadership in STEM?
The constant meeting format of moving up. Moving up requires stepping back and lots of meetings. I love the hands-on work, the satisfaction of fixing something, getting something working, and innovating.
I have a straight line to a retirement date; changing jobs was a big enough step with only 5-6 years left to work, but leadership I do not need that at this time in my life.
I love my job. I want to master it before moving to another role.
One of the challenges I see is that leadership in STEM is mostly male and older. It is not easy to be seen as an expert or a capable leader when you are being compared to daughters or granddaughters that are not in the same field. They still have a different viewpoint on who should be taking over when they retire, or what women are capable of. This has improved over the years, but it is still there and one of the challenges. The other challenge is having to seek out opportunities to learn from current leaders. Women are not always pushed into these opportunities and or will have to add them to their current workload without help. For myself, it is being new to the field of STEM and gaining the trust and buy-in of others. While I am learning more about the technical side, I have extensive leadership experience and education it is just the challenge of applying it well.
I am in a STEM leadership role.
Nothing
I am in it!
I have already stepped into leadership in STEM.
Nothing. Already there.
I am in a leadership position in my current role, which is a STEM role.
I am leading in stem!
Nothing
I am looking towards retirement as I have been with the company for 35 years.
Fear of failure.
Already in stem leadership
Time, commitment, kids. Being a single parent to elementary and middle school children prohibits me from doing many things I would like to do. However, I plan on doing more when the time comes.
Nothing, I have been a leader in STEM for over 20 years.
In leadership today
Nothing. We can be our own roadblocks and need to make sure we do not talk ourselves out of pursuing a career in STEM.
Fear of failure and not having the support needed to succeed. Vertical and horizontal relationships are paramount to leadership.
Nothing, I am already in a leadership position.

I am not qualified.
I have been a manager before, and it was not my favorite. Not a fan of being someone's boss.
Access to development tools and mentoring.
Not applicable
I am in leadership in STEM.
Nothing
Opportunity to help. I mentor where I can, but I would like to do more.
I am no longer interested in management after 30 years in the industry. I am just interested in continuing to do a great job in my current role, that I enjoy until retirement.
I struggle with the ability to teach instead of doing.

What challenges do they see in women going into the field of STEM?
Not focusing on the woman angle, you are part of a team, be a team member. Protections are in place now that weren't there a dozen years ago. Move forward.
Engineering is still a man's position, but it is opening up and allowing women to become leaders in the fields.
Lack of in-home learning (from personal experience). My father taught my son, but not his daughters. There was a lack of confidence in the beginning; however, with amazing support from my colleagues, I have been educating myself and excelling in the role.
Even when you are young, STEM is not pushed on girls like it is on boys, and breaking that pattern is tough and takes time. Also, depending on the support at home or the family's economic status cannot always support STEM as it can be more expensive than standard schooling. Women also have a long history of being in STEM but being in the background or not being taken seriously. This could lead potential bright minds will pick another career field with more acceptance.
Marketing jobs to women has always been the biggest hurdle, in my opinion.
I still believe that with all the acceptance and cultural changes, women still need to work harder to be noticed and advanced.
A perception that we are not technical enough because we illustrate our curiosity differently from the way men do. However, we are technical enough, so we must be courageous in our difference. As more and more women engage in its stem, the difference will not be as stark and will start to become normal over time. So, more and more women must engage!
Awareness and encouragement
Many women guess judged harshly, like being never technical enough compared to their men peers or being called defensive when they are just taking a stance.
As I see more and more automation, I see fewer roles available overall. Add to that, fewer women going to college for STEM-related degrees, leading to fewer women applying for STEM roles in the industry.
Getting them to know they are good enough and can do it
By nature, it is a certain personality type that goes into STEM. Building your network and finding meaningful connections takes work.
There still is a small amount of the "Good Old Boy" feeling in some areas within our field.
1. Managing and being seen when you are the only woman in the room. 2. Lack of mentorship.
I have only seen benefits as more women have moved into the stem.

<p>Women represent only about a quarter of the workforce. The bias still exists as men vastly outnumber women in this field. However, more schools are adopting the STEM focus, and organizations such as girls who code are providing exposure to young girls early on.</p>
<p>Being in the minority can be challenging. It can be daunting if you do not have a good support system or confidence in your abilities.</p>
<p>Lack of representation and support at all stages (ex: grade school to late career)</p>
<p>Not too many fellow women in the field may feel like women do not have a support circle who understand what they go through, stereotypes especially in the dominant male field, biasing.</p>
<p>It can be challenging to be the only woman in the room or the only woman with a voice in the room. Go beyond your comfort zone.</p>
<p>I may be a bit of an outlier, but I do not see any challenges for women entering a STEM field, I have been very fortunate and have never experienced intimidation or discrimination. I also have two brothers (the only girl in the family), so maybe I am just more comfortable than others in a mostly-male environment. However, I did go to a women's college, so I have experience with environments that skew heavily toward both genders.</p>
<p>In my case, I am neurodivergent, and there are specific expectations for how women interact with people. Unfortunately, I do not fit those.</p>
<p>Lack of interest for some females.</p>
<p>Fear and the lack of a quality education.</p>
<p>Work-life balance – the ability to work remotely post-pandemic will help, but we need to continue to increase work model flexibility to increase women in technical fields.</p>
<p>We cannot hire women because they are women or to make some arbitrary goal. We have to hire suitable candidates for the job. This means we must cultivate a strong bench of women if we hire women. This is where the challenge starts. Focus on early inspiration in our education system.</p>
<p>Life balance</p>
<p>It is being comfortable with asking questions and trusting their instincts.</p>
<p>Education into types of jobs and mentorship to help show what a field in STEM can look like.</p>
<p>Bias is unfortunately engrained from years and years of tolerance. Breaking the bias has to be intentional by everyone, not just women. The point of equality built around equity has to be the new muscle we build.</p>
<p>Women have personal conflicts with at-home responsibilities (raising children and running a home).</p>
<p>Having to prove yourself.</p>