Energy: Activated. Unlocking the Potential of Women in STEM

AdaMarie

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The Opportunity

Women now make up 53% of STEM degrees and outperform their male college classmates in both the physical and life sciences.[1]

But women excelling in STEM isn't a new phenomenon.

For decades, female-led innovation has advanced the technologies our society thrives on today: We have women to thank for GPS, coffee filters, windshield wipers, and even Wi-Fi.

Now, they're driving success in business. An analysis of the S&P Composite 1500 found that companies that embrace gender-balanced leadership teams have been evaluated as more innovative, and the returns on their innovations outpace those of their less gender-balanced competitors.[2] Gender-balanced firms are producing more products and registering more patents per year than firms that haven't prioritized inclusion.[3]

And despite the advancements women in STEM have made, workplace culture hasn't caught up:

Women in STEM are twice as likely as women in other industries to say they are considering leaving the workforce right now[4].

Only 18% of female STEM employees that AdaMarie surveyed believe that their employer has publicly stated DEI as a priority and has a clear roadmap for getting there.

In the tech sector, the highest percentage of women who leave their employer exit at midcareer – the point at which it is most expensive for the company to replace them.

In short, we're still stuck.

[1] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7316242/
[2] https://www.scientificamerican.com/article/how-diversity-makes-us-smarter/
[3] https://www.iam-media.com/article/diversity-in-the-workforce-leads-more-innovation-and-patents-new-study-finds
[4] https://www.aauw.org/resources/research/the-stem-gap/

Time To Break the Inertia

The STEM Workplace is failing to activate – much less harness – the power of women in STEM.

As the next generation of women enter the workforce, employers have a chance to rewrite this story.

Their talent will only be fully activated in workplaces that go beyond diversity to meaningful inclusion. Even the most well-intentioned leaders, though, can struggle with where to start:

Who is this next generation of women in STEM? What's important to them? What is needed to help them succeed?

AdaMarie conducted a large-scale analysis to answer these questions. This research captures the views, goals, frustrations, and challenges faced by Gen Z women and their (hopeful) employers:

200k
conversations

Qualitative and quantitative analysis of over 200,000 online conversations.

1062
respondents

Quantitative survey data drawn from 1,062 respondents.

12
1-on-1 interviews

A dozen one-to-one interviews with subject matter experts and stakeholders.

This report is a synthesis of the data and analysis derived from this research, enriched with perspectives and insights from additional experts in this space.

Top-Level Findings

First, the findings. Here's what we discovered.

We set out to understand what has worked, what makes it effective, and how organizations can gain an edge by becoming career destinations for the next generation of women in STEM. By capturing the voice of both employers and early-career women in STEM, our report highlights the opportunities to optimize our workplaces for all employees.

Who Are GEN Z Women?

To understand how employers can benefit from the contributions of Gen Z women, they need to first understand who they are. Our research led us to identify the defining and motivating forces that drive Gen Z. Consider this your field guide to the next generation.

Gen Z Women….

Are different. Just like everybody else.

Often mistaken as rebellious, Gen Z is as unlikely to identify as "counterculture" as they are to see themselves as conformists or "mainstream." Subcultures are more important and varied in this generation than in prior generations. They don't necessarily need to forge their own path as much as they need to choose their own path. Employers can engage them by presenting several clear potential pathways into future roles, so that they can choose a direction. **Fifty-two percent of our female survey respondents stated that "a clear path for growth and development" was their top priority in an employer.**

Don't want charity. But, they do want your investment

The newest female workforce is ready and eager to work, and they want to be given chances to prove themselves, hone their skills, and develop under the guidance of sponsors. Gen Z women understand the importance of mentorship and sponsorship, so retaining them depends on providing true allies and sponsors.

"I feel like we're written off as entitled all the time. We're not all like that, we just want a chance to prove ourselves or work with someone who takes us seriously enough to mentor us."

Value transparency and authenticity.

Trust must be earned. Gen Z women are more likely to apply to an organization that has no DEI statements at all than one that states they're "committed to inclusion" but doesn't say HOW. They are weary of being pandered to and demand proof that a company has gone beyond pink-washing or greenwashing. Their "show me, don't tell me" mindset leads them to ask how… "How are you accommodating a diverse workforce? How are you honoring your commitment to your communities? How? How? How?" **While 41% of female STEM respondents stated that their leaders have publicly stated a commitment to DEI, only 18% feel that they've shared a strategy to get there.**

41%

18%
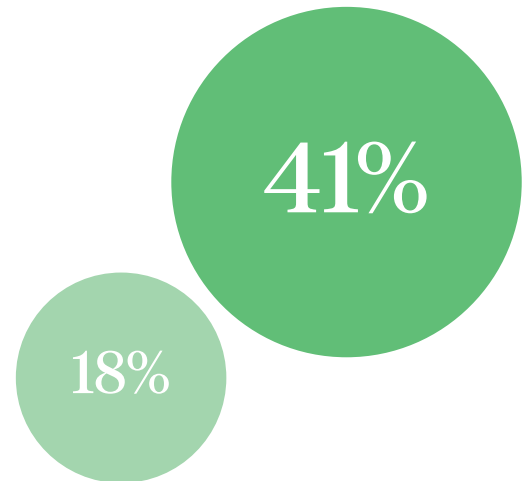
"It's weird to see a lot of companies in tech just seem stuck. Like, the world is evolving, fast, but you just want to do things the way you always have? Isn't tech supposed to be cutting edge? I don't want to worry my employer isn't keeping up."

Aim to future-proof themselves – in future-proofed businesses

Whether their backgrounds are in data science, product development, or systems analysis, Gen Z women know they need complementary abilities to communicate, problem-solve, and make difficult decisions. As they maintain well-rounded profiles, they're looking for employers who do the same. How are you upskilling your employees? Staying relevant? Evolving? Pathing employees forward? Inclusion is part of future-proofing. What's your strategy?

Appreciate feedback that is actionable and outcome-oriented.

The feedback women receive is less likely to be constructive or actionable. Data from AdaMarie echoed others studies revealing that Black people, Latinx people, workers over 40, and women receive significantly less actionable feedback than their coworkers.[5] Compounding this frustration, Gen Z women place a **higher** value on actionable feedback **than any other demographic**, with a special emphasis on wanting to understand how they impact business outcomes.

Seek Purpose over Gimmicky Perks.

It's out with ping-pong tables and in with sustainability KPIs, transparent governance, and ethical corporate citizenship. They don't trust platitudes and want to see businesses move from mantras to metrics. They also don't want to see any more purpose "outsourcing." Rather than raising awareness of issues or running employee giving campaigns, companies that measure what matters and take responsibility for their role and their impact will appeal to Gen Z. Purpose should be integrated, not a siloed "add-on."

[5] https://textio.com/blog/job-performance-feedback-is-heavily-biased-new-textio-report/5983880330

What Are The Blockers?

If the number of women pursuing STEM careers is increasing, and employers are stating that gender balance is a top priority, what's going wrong?

So far, approaches to retaining early-career women in STEM have fallen short. Despite the best of intentions, most DEI efforts have failed to achieve organization-wide change. To identify meaningful solutions, AdaMarie sought to understand what's not working, so we can find solutions that will.

These are the blockers keeping employers and employees from reaching their full potential:

⊘ Silos instead of Systems

In our research, we found that the majority of inclusion efforts in tech companies focused on recruiting underrepresented employees, conducting diversity trainings, and hosting empowerment-focused events such as all-day conferences and diversity celebrations. Many efforts put the onus back on underrepresented employees to motivate each other to overcome persistent obstacles. While communities such as affinity groups may provide a source of solidarity, no amount of mutual support can overcome inherently biased systems.

The roots of gender imbalance in the workplace aren't addressed by these initiatives. The causes are systemic, under the surface. They're part of the day-to-day functions that become the muscle memory of organizations. Here are a few examples:

- **Allocation of projects, clients, and accounts**: In firms that evaluate employee performance based on client tenure, satisfaction, and spending, women often appear to be under-performing, when compared to their male counterparts. These evaluations, however, don't tell the full story. Accounts and clients are often allocated inequitably. Because managers assume that men are better at working with clients, they will assign or transfer them accounts that already have successful track records to start with, avoiding "risking" these accounts on women. Women are assigned inferior accounts, or given new accounts instead of transfers. The superior client relationships that men have access to can lead to gendered differences in performance-based evaluations and pay. Women who feel they've been assigned clients with relatively successful track records, however, are evaluated as performing similarly to their male peers.

- **Names being left off of reports or patent proposals**: Female survey respondents across disciplines in STEM reported having their names left off of papers to which they contributed, being left out of invitations to present on projects they supported, and not being named as inventors on patents. Our findings echoed a 2022 study published in Nature[6], which found that "Women are less likely to be named as authors on articles or as inventors on patents than are their male teammates, despite doing the same amount of work." A data set covering 10,000 research teams controlled for the size of the researchers' roles in their projects, and found that men who played a similar-size role as women were twice as likely to be named on scientific documents.

"Women are less likely to be named as authors on articles or as inventors on patents than are their male teammates, despite doing the same amount of work."

- ***Unstandardized performance evaluations:*** Our survey results and interviews found that women were more likely to state that they had been assessed inaccurately in organizations that did not have quantifiable criteria in their performance evaluations. Making matters worse, employees in tech companies were the most likely to state their employers lacked standardized or well-defined evaluation criteria. In addition, women that were rated as underperforming in technical areas were more likely to experience penalties (being removed from important projects, for example) than men who were rated as underperforming.

Big Data = Big Bias

As STEM employers become increasingly dependent on AI, a pernicious assumption is spreading that software will allow them to escape the influence of bias. The mathematical models that underpin AI hiring and performance evaluation models, however, hold immense potential to scale bias, rather than limit it.

Algorithms don't just appear. Human beings, with bias, create them. For processes such as hiring, this has negative consequences for qualified, underrepresented applicants, and the employers who want to hire them; machine-learning-based recruiting systems have been shown to downgrade resumes that include the word "women" or otherwise indicate that the applicant was a woman. Multiples studies have found that resumes submitted by graduates of women's colleges, for example, or that include the term "women's chess club" were rated less favorably, compared to resumes of similar caliber submitted by men.

This biased sorting is a result of the ways that machines "learn" in the algorithm development process. To learn how to hire, machines are fed years of hiring history, which informs algorithms that determine whom to accept or reject. Hundreds of thousands of resumes marked "accepted" or "rejected" are scanned, interpreted, and sorted into a framework for what "hirable" looks like. Because tech companies have historically hired a disproportionate percentage of men, especially for technical roles, men are coded as hirable.

Despite the risks posed by AI-driven hiring tools, over half of managers in STEM companies report using them.

Information Overwhelm

Expectations on managers and executives to champion DEI continue to rise, but leaders who want to do the right thing often become overwhelmed. Many managers and executives start to explore DEI strategies and become paralyzed by an ever-changing DEI vocabulary, contradictory messages, and seemingly endless nuance. If they do implement new inclusive policies, they find a new segment of their employee base is angry at them.

Employees echo similar sentiments. Those from traditionally well-represented backgrounds want to support their peers as allies, but they don't know where to start or are worried they'll say the wrong thing. Women and employees of color are encouraged to stand up for themselves, only to be told they're too aggressive or arrogant. Other employees see these consequences and then avoid speaking up.

Whatever the particular mix of overwhelm looked like in the organizations we researched, the outcomes were repeated: underestimated employees eventually realize their only choices are to assimilate or leave, and the businesses and employees both miss out.

[6] Ross, M. B. et al. Nature https://doi.org/10.1038/s41586-022-04966-w (2022).

The Good News

These are solvable problems.

To move forward, though, employers must leave behind outdated approaches to DEI and embrace a systemic, evidence-backed approach.

AdaMarie's next phase of research focused on the keys to moving beyond just recruiting women to meaningfully including them. We share some examples below of the kinds of steps employers can take to pioneer an inclusive future of work. While these guidelines are not comprehensive, they demonstrate the kinds of mechanical changes needed to move beyond intention to sustained impact.

Increase Opportunities for Underrepresented Employees to Contribute and be Credited

Group meetings provide an early opportunity to spot employees with meaningful ideas and ensure that these employees are properly recognized. Without inclusive practices, though, underrepresented individuals may not have the same opportunities to make an impression or be credited. The following inclusive meeting behaviors can help ensure that a diverse range of voices are heard and recognized:

Invoke the participatory pause

When soliciting feedback on an important topic, ask for a one-to-two-minute reflection period before anyone raises a hand to respond. Even in diverse groups, men respond to questions more quickly than women do. Because underrepresented populations have been subject to "prove it again" biases that hold their answers to a higher standard, they may take longer to compose their responses before voicing their opinions. Invoking a "participatory pause" increases the odds that you'll hear from women, as well as neurodivergent employees and introverts.

Divide and Confer

If a topic is being presented for feedback within a large group, provide time for participants to meet in subgroups (as small as pairs) first. Individuals who fear their opinions may not be welcome may feel more comfortable sharing initially with a peer or small group of peers. Each subgroup should record their conclusions in a written format (such as a shared Google doc) before groups reconvene. This keeps this feedback from being buried once the larger group reunites, and the act of writing down one's contributions also increases the odds of being correctly credited.

Elevate Your DEI Strategies: From Data-Driven to Data-Smart

STEM employers outpace other industries in embracing analytics to drive their people decisions. This is a step in the right direction, but to ensure certain groups aren't left out, these decisions can't just be data-driven; they've got to be data-smart. Two keys? (1) Take an intersectional approach, and (2) track indicators upstream.

Analyze the Intersections

When most companies conduct a pay gap audit or an employee engagement survey, they tend to aggregate the data in two separate categories: by gender and by race. They're siloed. This means that the only gaps that surface are the differences between men and women, and the differences between white employees and employees of color. The data on women of color, or other employees at the intersection of multiple identities, gets buried. Companies that ignore these intersections in their data can go for years thinking that they have reached parity, when they have not.
In our research, for example, **Black women are the least likely to report that they have someone at work they can confide in, and most likely to report feeling isolated. Asian women are the most likely to report being asked frequently to help with office "housework" such as making coffee party planning, or other tasks outside their core job functions.** To reveal and address these gaps, employers must take an intersectional look at their data.

Evaluate Indicators Upstream

Many organizations measure end results, or lag indicators, such as the percentage of people in leadership who are women or people of color. These indicators do not help to identify processes upstream that would lead to different outcomes. Measuring lead indicators – the processes that drive success on lag indicators – will drive inclusive success. An example of a lead indicator would be asking in employee surveys, "Has your manager asked you about your career development goals in the last 12 months?"

If employers do not ask these questions, but look only at who has been promoted into leadership and see that women of color are not represented, they will not have any insight into the cause. They may misdiagnose the problem as a professional development issue, provide more training, and wonder why the gaps persist. Tracking indicators upstream lets you address the root causes of gaps, rather than just guessing at them.

Increase Transparency

When employers hear "transparency," they often think pay. To build trust with Gen Z women, employers must expand their definition of what transparency looks like.

Transparent Paths to Promotion

If your employees were asked what steps they need to take to advance in their organization, would they know what to say? Looking at the data from our surveys, **83% of women in STEM careers stated that they do not know what steps they would need to take to advance in their workplace** (compared to a national average of 72%, across all industries). To engage a generation that wants clear paths to choose from, increasing transparency around advancement is key.

Clear, transparent criteria let employees know what steps they need to take to advance, and they force leaders to look beyond confidence and charisma when evaluating someone for an advanced role. Without clear criteria, leaders are more prone to promote based on personality impressions, which are highly vulnerable to unconscious bias. Your employees should have on-demand access to the competencies required for each role, and they should be reminded of them via one-on-ones, mentoring meetings, learning and development planning sessions, and performance evaluations.

Share Your Equity Strategy

(And if you don't have one – time to start!) – If your organization is taking specific steps to create an equity-centered work environment, note it in your job descriptions, not just on the Careers web page. If you offer flexible or remote work arrangements, share that. If you conduct pay gap audits, share that. If your performance evaluation practices are standardized to counter bias, share that. Underrepresented groups are more likely to apply to organizations that go beyond stating that they're committed to inclusion by stating how they actually take steps to fulfill that commitment. If you don't have an equity and inclusion strategy, yet, AdaMarie is here to help.

What Now?

As the next generation of women enter the workforce, employers have a chance to transform the potential energy of women in STEM into kinetic energy, energy in motion.

AdaMarie knows you want to honor the talent you bring into your business with inclusion strategies that create a more balanced future for all. To generate momentum and activate potential energy, we've created the AdaMarie method, an assessment and optimization process that is...

Data-Smart

Many leaders want to build inclusive companies, but they don't know where to start. Our diagnostic assessment gets you out from under the DEI overwhelm by pinpointing exactly where opportunity gaps upstream are leading to uneven results downstream. By identifying root causes, we can help you triage your approach for the most impact.

Action-Oriented

No more vague directives to "increase a sense of belonging." Our recommendations identify the exact steps you need to take to close opportunity gaps, and the change management guidance to make sure best practices actually "stick."

Tailored

Inclusion is not a one-size-fits-all template. Just as you respect the diversity of your employees, we respect the diversity of the employers we work with. After getting to know your employees and culture, we tailor a roadmap that honors where you've been and catalyzes growth that suits your goals.

Intersectional

Gender is not binary and it does not exist in a silo. Many other facets of identity intersect with how gender impacts people in the workplace. AdaMarie's intersectional method takes into account how race, age, neurodivergence, caretaker responsibilities, and disability status interact with gender in the workplace.

No more outdated advice to "increase awareness of your biases." Instead, we employ a clear process to find where biases live in your systems, and help you eradicate them at the organizational – not interpersonal – level. We pride ourselves on meeting employers where they are.

AdaMarie

If you're ready to harness the full power
of gender equity in STEM -
let's connect!

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AdaMarie